The impact of HIV/AIDS on children and families study in Nyezelera
M. Zimbiri, C. Kapito and E. Jesman

Introduction
There are an estimated 285 people living with HIV and AIDS in Nyezelera group village headman in Phalombe district. HIV/AIDS impact not only PLHA but also their whole family. Many PLHA are parents and care givers who are supposed to attend to the needs of their children. The goal of the study was to understand the needs of the families and children affected with HIV/AIDS and the study used mixed methods containing qualitative quantities approaches.

Methods
Focus group were conducted with local health workers, local school teachers, village leaders, persons living with HIV/AIDS and care givers for children affected by HIV/AIDS in Nyezelera. Face to face interviews were conducted with 154 care givers for HIV affected children.

Results
The majority of the care givers interviewed in the quantitative study were parents (84%), 80% were HIV positive, and 58% were female. About 54% of the care givers rated quality of life as poor and 85% reported frequent negative feelings. The daily income per person for HIV/AIDS affected families was MK30.00 than the daily income per day. HIV also impacted family relations and family economic situation. The impact of HIV on children was reflected in children's school performance. Children's nutrition and health were also compromised.

Conclusions and Recommendations
Interventions that address the challenges that families face, build families coping skills, and form supportive local community networks, are needed. Partnerships need to be further strengthened between parents, families, NGO’s, CBO’s and government to ensure one holistic development of children.

Qualitative end-of-program results from the sage4 health study in rural central malawi: participants’ perspectives on the impact of care farmer field schools on food security and HIV vulnerability
P.E. Stevens, L. Mkandawire-Valhmu, T. Mwenyekonde, L.W. Galvao, F. Yan1 and L.S. Weinhardt

Introduction
Poverty and lack of stable sources of food have been identified as determinants of HIV/AIDS. Yet, few studies have examined how improvements in peoples’ economic status and food security might translate into changes in HIV vulnerability. We evaluated the SAFE Program, an 18-month multi-level, economic and food security intervention implemented by CARE-Malawi in rural Kasungu District.

Methods
In the SAGE4Health Study we conducted a mixed-methods quasi-experimental non-equivalent control group longitudinal study to examine mechanisms and magnitude of impact of SAFE. Here we focus on the qualitative end-of-program evaluation providing participants’ perspectives on how the Farmer Field Schools (FFS) component of SAFE affected them. From among 600 program households surveyed, we purposively sampled 60 women and 30 men for interviews and focus groups. Data were analyzed thematically.

Results
Participants identified skills-building in “modern farming,” seed loans, demonstration gardens, nutrition education, and fair markets for surplus crops as helpful parts of FFS. Outcomes described were: crop diversification, seed saving, increased food group diversity in daily diets, greater likelihood of morning meals, and decreased need to do ganyu (piecework), a practice they linked to multiple health risks. Obstacles to benefiting from the intervention included: men’s excess alcohol consumption and “pregnancy every year.”

Conclusions and Recommendations
Participants perceived their families better fed and healthier, and their farms more productive because of the intervention. They felt empowered to avoid “harvesting hunger,” the vicious cycle of working in others’ fields for survival cash and food only to leave one’s own small holder garden neglected. We cautiously suggest that FFS may offer opportunities for decreasing HIV vulnerability via changes in food security and economic livelihood, which may be further influenced by reducing risks of problem drinking and increasing acceptance of family planning. These qualitative findings generate hypotheses for verification using our quantitative data (forthcoming 2014)

A qualitative systematic review regarding factors that facilitate or inhibit adolescents gaining access to sexual and reproductive health services in developing countries.
I. Chilinda

Introduction
Adolescents are regarded as a healthy generation and as such, they are undeserved when accessing sexual and reproductive health services (SRHS) in developing countries. It is important to note that adolescents have reproductive health needs which need special attention. As such, SRHS that are accessible, appropriate and acceptable would significantly meet their reproductive health needs.

Methods
A qualitative systematic review of studies from developing countries was done. An online search of Cumulative Index to Nursing and Allied Health Literature (CINAHL), British Nursing Index (BNI), EMBASE and MEDLINE databases was conducted to identify relevant studies for the review using a three stage search strategy. Both published and unpublished studies from 1993 to 2012 were retrieved. The eight studies that met the inclusion criteria were critically assessed by two independent reviewers using the standardised Joanna Briggs Institute (JBI) critical appraisal tools. Data was extracted using the standardised JBI data extraction tools. Data was analysed by means of narrative synthesis.

Results
A total of seven qualitative studies yielded forty-five findings. The findings were analysed, synthesised and grouped into two overall themes “Internal barriers and external barriers”. Internal barriers originated from the adolescents and included lack of knowledge regarding SRHS, embarrassment and shame. External barriers revealed key barriers originating
from health care providers and included lack of privacy and confidentiality amongst health professionals; attitude of health care professionals; policy and legislation and lack of youth-friendly RH services

Conclusions and Recommendations

The results of this review demonstrate that adolescents are in a vulnerable situation when accessing SRHS in developing countries. To better meet their reproductive health needs, concerns to privacy and confidentiality, unprofessional attitude of health professionals and lack of reproductive health knowledge must be addressed.

Rates of intolerance to efavirenz, in the context of the mass switch to tdf/3tc/efv: the experience at the lighthouse clinic, lilongwe, malawi


Introduction

Malawi is in the process of switching all patients taking d4T (>85% of the 400,000 on ART) to TDF/3TC/EFV. Local data on side effects of EFV are scarce, and estimates of future intolerance are necessary to enable pragmatic forecasting of future drug needs. Lighthouse Trust is a tertiary referral ART centre, managing a cohort of over 22,000 patients on ART.

Methods

All patients who had ever switched from TDF/3TC/EFV to TDF/3TC+NVP (by definition intolerant of EFV) were identified from the Lighthouse database. Case files were reviewed and the reason for switching recorded. The weight, age and gender of intolerant patients were compared to patients who managed to tolerate TDF/3TC/EFV.

Results

4808 patients were taking TDF/3TC/EFV by March 2013. A cumulative total of 106 patients had switched to TDF/3TC+NVP, 94 alive and in care: an intolerance rate of 2.0%. A clear reason for switch was documented in 45 files. The main reasons were: persistent/disabling dizziness 58%, rash 16%, psychosis 13%, memory loss 9%, and confusion 7%. Others included: sleep disturbance, abnormal gait, and gynaecomastia. The median duration on EFV prior to switching was 47 days (IQR 28-105). Age, weight and gender were found to have no statistically significant value in predicting the likelihood of intolerance.

Conclusions and Recommendations

Rates of intolerance were double the estimates from national level data (<1%). An intolerant patient not switched appropriately may default entirely from ART, so 2% is likely to be a more accurate reflection of rates of intolerance. This should be considered when forecasting drug requirements on the national level. By the end of the switching process, 350,000 patients will have started TDF/3TC/EFV, and around 2,000 patients may have developed severe psychiatric disturbance. Clinicians should be aware of this possibility, and a previous history of psychiatric problems should be excluded prior to starting.

HIV ART Cross Border Patient (CBP) Survey, Looking into management systems and access to health care services in the three districts of Malawi in 2012

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Introduction

International travelling and economic activities are getting more convenient and links with the socio-economic within the Southern African Development Community (SADC). Predominately, more than 70% of (PLHIV) are in SADC region. In Malawi, by June 2012, 617,992 patients registered on ART, 83,243 default cases, and 22,475(27%) defaulters could not be traced consider as cross-border patients (CBP). We conducted the baseline study for future developing management system for HIV CBP with innovative information technology solution and to create a migrant-friendly environment for CBP to have access to healthcare services in the SADC region.

Methods

A cross-sectional quantitative study design conducted in 2012. Three boarder district and 1 central hospital were recommended by the SADC secretariat to participate. Data was collected during ART clinic days using a structured questionnaire.

Results

3,186 clients participated in the study, 61.9% female and 37.1% male. The mean age (years) and duration for taking ART was 36.9 and 2.8 respectively. 74(2.3%) patients came from other countries. Among these expatriates, 64.9% said travelling is the reason of having ART in Malawi. 161(5%) ART clients would go abroad; however 91.2% mobile clients are not supplied with ART while they go abroad. Hence 87.5% clients would carry ART abroad. Among these mobile clients, 14.1% of them had poor drug adherence while non-traveller had 8.4% poor drug adherence (p=0.015).

Conclusions and Recommendations

The study provided first scientific evidence for the HIV CBP management since they are at higher risk of loss to follow-up or having bad adherence in the HIV/AIDS care system.

Outcome of pregnancy in a sample of hiv positive women receiving TDF-based ART: preliminary results.

H. Jere, H. Sangarè, D. Thole, R. Mphwere, J.B. Sagno, R. Luhanga, G. Liotta

Introduction

Malawi pioneered the implementation of lifelong triple therapy for Prevention of Vertical Transmission using tenofovir based therapy in sub-Saharan Africa in 2011. Aim of this paper is to describe the outcome of pregnancy in women followed through the national guidelines and the children’s growth.

Methods

This is a longitudinal observational study in which women
coming to the ANC services in health centres are tested and if positive enrolled in the study after giving their consent. Mother and their child, are followed according the national guidelines. Pregnancy outcomes and children clinical outcomes are recorded at each visit until two years of child life.

Results
Since November 2011 395 women have been enrolled (mean age 28.1 years; SD ± 5.2) of which 221 ended the pregnancy: abortion/stillbirth accounted for 17 patients (7.7%). The cohort consists of 97.6% mothers with W.H.O. staging of 1-2 condition. Most of them have received TDF-based HAART (368/395, 93.1%) and only 30 have been started on HAART before pregnancy. About 95% of the pregnant women ended the pregnancy in a health structure, and 19 cases delivered by caesarean section. Mean pregnancy duration was 38.7 (SD ±8.7). Pregnant women start HAART late in pregnancy, on average at 28 weeks (SD:±7.8). This delay translates in a short time of HAART before the end of pregnancy (213 days; SD±381). Low birth weight children are 12.5 % . Infant mortality rate: 27/1000). There was no Maternal death

Conclusions and Recommendations
Preliminary results of the study show the positive impact of the approach supported by the recently approved new Malawians Guidelines for ART/PMTCT. More deep and extended evaluation is needed to better understand the impact on infant mortality and vertical transmission. More studies to be carried out to understand the impact of option B plus on infant mortality.

Local experience with genotypic resistance testing in the malawi dream programme, possible implications for viral load monitoring.

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Introduction
To evaluate the development of resistance mutations and impact of adherence counseling on patients with high VL after 12 months of treatment in the context of the new HIV/AIDS integrated guidelines.

Methods
Adult patients with viral load >1000c/ml after 12 months of first-line ART underwent resistance testing at DREAM Laboratory and a reinforcing adherence program for six month. VL was repeated at 18 months and resistance tested in those with VL>1,000 c/ml.

Results
Preliminary results on 56 patients are presented. 80% were female, mean age was 34 years (SD ±8.6) and 80% were on stavudine based ART. Higher VI. at 12 months was related to low adherence (p<0.001) and higher baseline VL (p<0.001). At 12 months of ART mutations conferring resistance to ARV drugs were detected in the plasma of 25 patients (46.5%), most of them harbored resistant to both NRTI and NNRTI (17/25). The most frequent mutations to NNRTI detected were Y181C, K103N, G190A while for NRTI it was M184V. At 18 months 44 patients had a VL test and 24 (55%) had VL<1000 c/ml (19 undetectable). Of the remaining 20 patients 7 underwent a resistance test that showed only one new mutation in one case compared with the tests performed at 12 months. Percentage of patients who reached undetectable viral load at the 18 month control among the ones who showed resistances at 12 month was 25% and among the ones without resistance was 79% (p=0.002).

Conclusions and Recommendations
About half the patients who have VL>1,000 at 12 months re-suppressed to below this threshold after a 6-month adherence support program. Despite the small sample, accumulation of mutations in those who do not re-suppress appears to be limited during this episode. There is need to strengthen the adherence programs for patients with first virological failure.

Impact on retention of a PMTCT services run through a mobile clinic in a Malawi rural area

D. Thole, R. Luhanga, I. Mkandawire, A. Kaniemba, H. Jere, G. Liotta,E. Allumando

Introduction
Retention into PMTCT services, especially in rural areas, where health staffing levels are low is a challenge in Malawi. The aim was to analyze the impact of a mobile clinic services dedicated to support PMTCT program on retention and other outcomes at Mulibwanji health centre in rural Malawi.

Methods
Mulibwanji Hospital is located in a very rural area in the Mangochi district at the eastern border of Malawi with Mozambique. The existing personnel is overwhelmed by the routine work load. A mobile clinic run by the DREAM program provides all PMTCT services support twice a week offering routine testing , early infant diagnosis ,and provision of HAART according to Option B plus policy . Adherence support is provided by trained expert clients living in the communities where the mothers are living. PMTCT services are offered until children reach 24 months of age as per the National Guidelines.

Results
The program enrolled 237 women ,retention was at 97% (231/237) at one year period. The mean time spent in the PMTCT program is 300 days (IQR25-75: 216-349). Some patients started HAART (37/237, 15.6%) after delivery. The median length of pre-delivery HAART 72 days (IQR25-75: 36-99) . Out of 224 children who accessed the program, HIV status at six week was available for 163: 4 children (2.4%) were tested positive (DNA-PCR).Of these 2 occurred in children whose mothers did not take HAART before delivery and the third one in children born to a mother who took HAART for 7 days before delivery. The infant mortality rate was 12.3/1000 p/y.

Conclusions and Recommendations
Mobile clinic programs has potential to improve retention and other PMTCT outcomes in rural settings with health staffing problems .More efforts needed to improve uptake
of PMTCT services to avoid starting HAART after delivery.

A pragmatic randomised controlled strategy trial of three second-line treatment options for use in public health rollout programme settings: the europe-africa research network for evaluation of second-line therapy (earnest) trial


Introduction

The incremental benefits of new/recycled nucleoside reverse-transcriptase Inhibitors (NRTI’s) or raltegravir (RAL) on a boosted PI (bPI) backbone for second-line therapy are uncertain, particularly in settings where resistance testing, regular viral load (VL) monitoring and early treatment switches are unfeasible.

Methods

1277 patients aged ≥12y, meeting WHO-defined treatment failure criteria (confirmed by VL >400 copies/ml) after >12 months on NNRTI-based first-line treatment were randomised in an open-label trial in 14 sub-Saharan African sites. The superiority of (B) bPI plus RAL and the non-inferiority (10% margin) of (C) bPI monotherapy (+RAL induction for 12 weeks) were compared to (A) bPI+2/3 physician-selected NRTIs. bPI was standardised to lopinavir/ritonavir, 400mg/100mg b.d. Treatment was monitored clinically and by open CD4 count. Annual blinded VL and resistance testing was reviewed by a data monitoring committee. The primary endpoint, good disease control, was defined as no new WHO stage 4 events (or death) and CD4 count >250 and VL < 10,000 (or >10,000 without PI resistance mutations) at week 96.

Results

Patients were 58% female, median baseline CD4=71. One percent was withdrawn/lost to follow-up. Proportions with good disease control were (A) 60%, (B) 64% (absolute risk difference vs. A: +4%; P=0.20) and (C) 55% (difference vs. A: -4%; P=0.22). There was no difference in grade 3/4 adverse events between groups (P=0.80). However, 61% (C) had VL<400 at 96 weeks vs. 86% (A) (difference -25%; P<0.0001) and 86% (B) (difference vs. A: -1.1%; P=0.97). 2% (A), 1% (B) and 18% (C) (p<0.0001) had intermediate/high-level lopinavir resistance.

Conclusions and recommendations

bPI+RAL was not superior over bPI+2NRTI; bPI monotherapy was not non-inferior on the primary endpoint and had much higher rates of virological failure and resistance. Results strongly support the standard second-line ART regimen in Malawi. bPI monotherapy is unsuitable for settings that lack regular/reliable VL monitoring.

LABLITE: Baseline mapping survey of decentralised paediatric ART service provision in Malawi, Uganda and Zimbabwe

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Introduction

In Malawi, Uganda and Zimbabwe, 21%,14% and 15% of HIV+ individuals needing ART were children. Estimated paediatric coverage rates(29-46%) lagged behind adults(62-86%).

Methods

In a cross-sectional baseline survey(2011-12), health facilities were purposefully selected to represent different regions, health care levels and stages of ART provision in Malawi(20), Uganda(39) and Zimbabwe(22).

Results

PMTCT was provided in 80/81 facilities; 52/53 primary health centres (PCs). All secondary/tertiary facilities delivering ART; only 57% PCs did so. In Malawi and Uganda all PCs delivering ART also provided paediatric ART; in PCs in Zimbabwe paediatric ART was only through outreach. Children comprised only 8% of all on ART. For PMTCT, TDF-based ART was available in 68% Malawian facilities due to Option B+ roll-out; the remainder did Option A. In Uganda and Zimbabwe, Option A was universal. Most(75%) facilities reported using infant NVP. For paediatric ART, more ZDV-based regimens were used: 12/13 in Malawi and 20/24 in Uganda; 4/13 and 10/24 still used D4T-regimens. In Zimbabwe, d4T-regimens were being used in PCs but secondary facilities had changed to ZDV. First-line regimens including ABC were only available in Uganda. TDF was available for children in 3 facilities in Uganda. LPV/r was very rarely used as first-line (2 facilities in Uganda; 1 facility in Zimbabwe). Where available, second-line ART was almost always LPV/r. In the 3 months prior to survey, 26%, 10% and 0% facilities reported stock-outs of ART for PMTCT in Malawi, Uganda and Zimbabwe. Stock-outs of paediatric ART were reported for 15%, 25% and 33% facilities versus stock-outs of adult ART in 8%, 0% and 29% facilities respectively. Stock-outs of CPT occurred in 58%, 32%, 9% respectively.

Conclusions and recommendations

Numbers of children on ART are disproportionately low although proportions initiating are increasing. There is urgent need to increase paediatric coverage. Supply chain management needs improvement with and Option B+ ART decentralisation.
Increasing retention of patients starting ART in Karonga district, north Malawi, 2005-2012

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Introduction
Retention in care is a major challenge in most settings. However, retention may change over time, and can be used as a key indicator of current programme quality.

Methods
In Karonga District, the number of clinics providing ART expanded from 1 in 2005 to 16 in 2012. We recorded information on adults (15 years) starting ART between July 2005 and August 2012, excluding those initiating due to pregnancy and breastfeeding (Option B+). Retention in care was defined as being alive and receiving ART at the end of study. Follow-up time was censored upon transfer out of the clinic. Failure was defined as default from care or death. Our objective was to examine whether retention changed between those starting ART in 2005-06, 2007-08, 2009-10 and 2011-12, and to explore potential drivers for this change.

Results
By August 2012, over 7000 adult patients were alive and receiving ART. Six month retention increased from 78% (95%CI 75-80) to 93% (92-94) when comparing the 2005-06 and 2011-12 cohort, and 12 month retention increased from 74% (71-76) to 92% (90-93). Over the study period, the proportion of patients starting ART at WHO stage 4 declined from 59% to 10%. Being a woman, older than 35 years, living closer to the ART clinic, having a lower WHO stage and being part of a later cohort were all independently associated with better retention.

Conclusions and recommendations
In Karonga District retention in care has increased dramatically. Improved health in patients starting ART and decentralization of ART care to peripheral health centres appear the major drivers for this change. Initial high rates of loss to follow-up should remain a motivator for strengthening care, but should not deter programmes from expanding ART availability, which is likely to enable patients to access care sooner, thus improving outcomes further.

Feasibility, uptake and impact of cervical cancer screening at lighthouse HIV clinic: Lilongwe, Malawi
C Speight, F. Nanga, S Phiri, H. Tweya, M. Hosseinipour, F. Taulo

Introduction
Cervical Cancer accounts for 45% of cancers in women in Malawi resulting in approximately 1000 preventable deaths annually. HIV+ women have increased risk of developing invasive cervical cancer due to reduced cell mediated immunity. Visual Inspection of the Cervix using Acetic Acid (VIA) is a simple, low cost and easily taught screening technique that allows same day identification and treatment.

Methods
Lighthouse (at KCH) is a tertiary referral HIV clinic, treating over 10,000 patients. VIA screening was established in February 2012. Patients were sensitized during education sessions, and screening advised for all women over 20. On-site cryotherapy was introduced in September 2012 for women with abnormal findings. All women with advanced disease were referred to gynaecology.

Results
Between February 2012 and June 2013, a total of 1103 women were screened. Of these, 146 (13%) had abnormal findings warranting treatment, including 34 with evidence of established cancer. Prior to September 2012, all with abnormal findings were referred to gynaecology (108 women), but subsequently 33 women with pre-cancerous changes benefited from on-site cryotherapy.

Conclusions and recommendations
The number screened in the first year equated to 14% of eligible women, which although below the optimum rate of screening for a tri-annual test (33% per year), still demonstrates high demand and acceptability, particularly given the ‘opt-in’ nature of screening. The high rate of positive findings, particularly in younger women, clearly demonstrates the benefits of screening. Screening women already attending regularly for HIV care is significantly less challenging than implementing a national programme. Given the high rates of positive findings it is also likely to have significantly greater impact per woman screened, and should be offered routinely in this context.

Outcomes in a decentralized paediatric ANTIRETROVIRAL TREATMENT (ART) cohort at Zomba Central Hospital (ZCH)
J. Brophy & M. Hawkes, E. Mwinjiwa, G. Mateyu, S. Sodhi, A. K. Chan

Introduction
Paediatric outcomes in ART programmes have lagged behind adults. We describe outcomes from a decentralized patient cohort from Zomba District.

Methods
Data collected from October 2003-September 2011 on children at ZCH and 22 decentralized ART clinics of Zomba DHO were analyzed. Kaplan-Meier survival analysis was conducted to assess impact of factors on mortality including: age, presenting features, drug selection.

Results
The cohort comprised 2203 children(51% female). Age at entry was <1 year for 219(10%), 14.9 for 927(42%), and 5-15 for 1057(48%). Initial diagnoses of tuberculosis were documented for 409(19%). Median follow-up(FU) time was 1.5 years(range 0-8), with a total of 3900 patient-years FU. 1324(60%) were retained alive on ART, 345(16%) transferred-out, 134(6%) died, 387(18%) were lost to follow-up(LTFU) and 13(1%) had missing data. Infants(<1 year) accounted for 19% of deaths; median time to death was shorter for infants(60 days) vs. older children(110 days). The distribution of patients LTFU, was distributed evenly over age strata (10% among patients <1 year, 41% among
patients 1-4.9 years, 49% among those 5-15 years). Survival analysis demonstrated younger age at ART initiation (log-rank test p<0.001), advanced HIV stage (p<0.001), and presence of tuberculosis (p=0.006) to be associated with a shorter survival time. Among children <5 years, severe wasting (weight-for-height z-score <= -3.0) was associated with reduced survival time (p<0.001). Patients on efavirenz-based ART had prolonged survival time vs. non-efavirenz regimens (p=0.036); when analysis was restricted to patients aged >3 years, no significant difference was seen (p=0.110).

**Conclusions and Recommendations**

There is a disproportionate rate of death in infants <1 year and children with tuberculosis. Earlier death was noted in infants, reinforcing the urgency for earlier diagnosis and treatment in this vulnerable population, and the importance of Option B+. Adoption of the 2013 WHO recommendation to expand ART eligibility to all HIV+ children <5 years and earlier treatment at CD4<500 cells/μL would likely improve survival.

**Impact of capital projects on Sexually Transmitted Diseases and HIV/AIDS in Mwanza [a cross sectional study]**

E. Chihana, J. Stephens and A. Matewere

**Introduction**

The HIV/AIDS prevalence rate in Mwanza District had been gradually decreasing from 18.5% in 2005 to 8.9% in 2012. In recent years, however, Mwanza has experienced a population influx including sex workers and other high-risk groups due to the Moaritze-Nacala Railway project under construction in the area. This may contribute to an increase of high-risk sexual encounters. We examined the extent of high-risk population dynamics and factors relating to the change and established evidence of potential risk of population influx.

**Methods**

We identified STI/HIV/AIDS hotspots and interviewed 52 representatives from sampled institutions using a structured questionnaire. Secondary data was collected from hospitals to compare the trends of STIs during the time when the railway project was under construction to two years prior to the project construction. We conducted a Focus Group Discussion with sex workers to triangulate findings on population influx and establish reasons relating to the change.

**Results**

Sex workers population increased threefold and their average number of sexual encounters on a busy day doubled from 3 to 7 during the period when the project was under construction. STI cases reported within 12 months prior to project construction were 2,741 cases and STI cases reported within 12 months during the project implementation were 4,035 cases representing an increase of 47%. The construction company did not sensitize populations on HIV/AIDS and STIs as outlined in the company’s Project Environmental and Social Management Plan (ESMP).

**Conclusions and Recommendations**

The Railway project and the resulting increase in transient workers and increased cash flow have caused commercial sex work and sexual activity in Mwanza district to increase. The increased numbers of STI cases correlate with the arrival of the Project. Development projects need to formulate and be vigilant in implementing their ESMPs. A more comprehensive condom programme is needed to complement development projects.

**Impaired Malaria-antigen-specific CD4 T cell immunity in HIV-exposed children on Cotrimoxazole Prophylaxis**

H. Longwe, F. Munthali, R.vMankhanamba, K. Phiri, K. Jambo, W. Mandala

**Introduction**

As a national policy in Malawi, cotrimoxazole prophylaxis is given to HIV-exposed uninfected (HEU) infants from 6 weeks to 12 months of age. Cotrimoxazole does not only prevent bacterial infections, but is also an effective anti-malarial. In this study, we investigated the effect of cotrimoxazole prophylaxis on the acquisition of Plasmodium falciparum specific CD4 T cell responses in HEU infants.

**Methods**

Peripheral blood was collected on 33 HEU and 31 HIV healthy unexposed control infants who were recruited at 6 months of age and are being followed up 6 monthly until 18 months of age. Twenty-eight HEU infants and 26 controls have been evaluated at 6 months and followed up to 12 months so far. Immunophenotyping was performed by flow cytometry on peripheral blood. Frequency of Plasmodium falciparum antigen-specific CD4 T cells in whole blood were measured using an intracellular cytokine staining assay following stimulation with Plasmodium falciparum-infected red blood cell lysate.

**Results**

There was no significant difference in percentage of B and T cell subsets between HEU and control infants at baseline and at 12 months follow up. HEU infants had reduced frequencies of IFN-γ-producing P. falciparum antigen-specific CD4 T cells compared to controls at 12 months, p=0.001. There was no difference in the polyfunctional IFN-γ+IL-2+TNF+-producing P. falciparum antigen-specific CD4 T cells between HEU and controls at baseline and at 12 months follow up.

**Conclusions and Recommendations**

These results are suggesting that there is lower frequency of IFN-γ-producing P. falciparum specific CD4 T cells in HIV exposed children after a year on cotrimoxazole prophylaxis. This might be due to delayed acquisition of P. falciparum-specific adaptive immunity due to the antimalarial effect of cotrimoxazole or due to the effect of HIV exposure. Suboptimal P. falciparum-specific CD4 T cell immunity might increase the risk to malaria in HEU later in life.
One year outcomes following availability of community-based HIV self-testing: uptake, accuracy and linkage into care in a prospective study in Blantyre, Malawi

**Introduction**
HIV testing and counselling (HTC) is the entry point to care and prevention, but only ~25% of adults in sub-Saharan Africa have tested for HIV in last 12 months. We aimed to investigate HIV self-testing (HIVST), a novel approach in terms of uptake, accuracy, adverse events including subsequent linkage into care.

**Methods**
16,660 adult (16 years) residents (HIV prevalence 18.5%) were included in a cluster randomised trial. Two residents were trained in each neighbourhood to provide HIVST from their homes. Clients received written and verbal information to promote linkage into HIV care coupled with home-initiation of HIV care if requested. Population-level uptake was estimated from enumeration denominators. Accuracy of HIVST was assessed through quality assurance (QA) of 10% randomly selected self-testing clients.

**Results**
Overall, 13,966 self-test kits were distributed with 89% returned with feedback forms. Uptake was 76% (12,658/16,660), including 5,840 (67%) men. Uptake was highest in the youngest age-group (16-19: 2,360/2,539, 93%) falling to 41% (298/733) in men 50. Early adopters (2,658 in 1st month) were significantly more likely to be female, adjusted odds ratio (aOR) 1.20 (95% CI 1.06-1.36); younger Ptrend<0.001, and not in a couple aOR 2.22 (95% CI 1.54-3.16). In total, 851/16660 (9%) residents confided positive HIVST results with 25% already on ART and 500/638 (78%) accessing HIV care. QA showed 99.1% agreement with self-reported results (sensitivity 93.8% [95% CI 85.0-98.3%], specificity 100% [95% CI 100-100%]). No suicides were reported, but coercion was reported by 147 (3.7%) male and 119 (2.2%) female respondents (p-value<0.001), mostly from partners.

**Conclusions**
Uptake of HIVST, subsequent linkage into care, and accuracy were high with this strategy. Community-based HIVST offers high potential to increase knowledge of HIV status, assisting with increasing access to HIV care and prevention when combined with proactive linkage strategies.

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CD4 count outperforms world health organization clinical algorithm for diagnosing HIV infection among hospitalized HIV-exposed Malawian infants
Madalitso Maliwichi, Nora E. Rosenberg, Rebekah Macfie, Dan Olson, Irving Hoffman, Charles M. Van Der Horst, Peter N. Kazembe, Mina C. Hosseinipour, Eric D. McCollum

**Introduction**
Successful antiretroviral therapy (ART) in HIV-infected infants relies on timely HIV diagnosis. For point-of-care diagnosis, a World Health Organization (WHO) clinical algorithm can be used to initiate ART. It is unknown if non-physician clinicians called clinical officers (COs) use the algorithm similarly to physicians, or how algorithm performance compares to different CD4 count thresholds, another potential point-of-care option. The aim of the study was to compare different point-of-care options for early infant diagnosis in a resource-limited setting.

**Methods**
In 2011, hospitalized HIV-exposed infants <12 months were enrolled in Lilongwe, Malawi. Infants were evaluated independently with the WHO algorithm by both a pediatrician and CO. Blood was collected for CD4 and molecular HIV testing (DNA or RNA PCR). Using molecular testing as the reference, sensitivity, specificity, and positive predictive value (PPV) were determined for the WHO algorithm by pediatricians, COs, and CD4 count thresholds of 1500 and 2000 cells/mm3.

**Results**
We enrolled 166 infants (50% female, 34% <2 months, 37% HIV-infected). Sensitivity was higher using CD4 thresholds (<1500, 80%; <2000, 95%) than with the algorithm (physicians, 57%; COs, 71%). Specificity was comparable for CD4 thresholds (<1500, 68%, <2000, 50%) and the algorithm (pediatricians, 55%, COs, 50%). The positive predictive values were slightly better using CD4 thresholds (<1500, 59%, <2000, 52%) than the algorithm (pediatricians, 43%, COs 45%) at this prevalence.

**Conclusions and Recommendations**
Performance by the WHO algorithm and CD4 thresholds resulted in many misclassifications. Point-of-care CD4 thresholds of <1500 cells/mm3 or <2000 cells/mm3 could identify more HIV-infected infants with fewer false positives than the algorithm. However, a point-of-care option with better performance characteristics is needed for accurate, timely HIV diagnosis.
Interim evaluation of a targeted socio-economic program to support HIV-infected patients and affected household members in rural Malawi

Junior Bazile, Edwin Kambanga, Victor Kanyema, Blessings Banda, Henry Makungwa, Chembe Kachimanga, Annie Michaelis, Manes Amanah Chingoli, Matthew Peckarsky,
Lisa R. Hirschhorn, James Keck, Angela Letizia, Jonas Rigodon

Introduction

Abwenzi Pa Za Umoyo, the Malawian sister organization of Partners In Health, seeks to address root causes of disease and increase HIV patient retention in care through the Program On Socio- Economic Rights (POSER) in rural Neno District. POSER uses structured assessments to gauge household vulnerability (clinical conditions, income potential, assets, access to services) and links high-risk households with targeted resources, in order to improve adherence to HIV treatment services. POSER provided direct cash/food transfers, vocational trainings, housing construction/renovation, school expense funding, and/or microfinance project support to over 5,000 HIV-positive patients and household members during 2008-2011.

Methods

A qualitative interim evaluation was done to assess POSER program achievements and areas for improvement. Key informant interviews were conducted with a convenience sample of 30 clients from across the range of POSER services and 4 District government leaders.

Results

There was strong agreement among the key informants on several program achievements, including: 1) POSER support improves health by reducing barriers to care-seeking and increasing household food security; 2) school support is the most effective POSER program for helping break the cycle of poverty and illness; and 3) health of the full household is improved when a patient receives POSER assistance. Additionally, there was consensus on two key areas for improvement: 1) POSER should increase transparency of its selection criteria, especially for housing recipients; and 2) vocational training would be more effective if graduates received start-up tools/materials, since lack of resources has prevented training graduates from putting new skills to use.

Conclusions and recommendations

According to this preliminary evaluation, the POSER model shows promise as a method for improving wellbeing of HIV-affected households in rural Malawi. Quantitative evaluation of POSER’s impacts on household assets, employment, food security, retention in care, and health outcomes is underway.

Innovative ways to increase retention in pregnant women and mother-child pair in Malawi – strength of partnership between Ministry of Health and implementing partners

E Alumando, H Sangare, H. Jere, R. Luhanga, G. Liotta

Introduction

Malawi is in the process of scaling up PMTCT services under Option B plus policy. Since the introduction of the policy, there have been some challenges in the form of low retention as well as problems with Early Infant Diagnosis (EID) access, analysis and delivery of results to mothers. The objective of the paper is to evaluate the impact of innovative approaches like use of expert client, telecommunication technology, and effective managing chain for DBS on the problems associated with PMTCT services.

Methods

Mothers accessed the PMTCT services in different health facilities from Balaka, Machinga, Mangochi and Blantyre. DREAM project provided Intensive adherence support through expert mothers, phone calls to patients missing appointment for drug refill and early diagnosis sample collection and results. All EID samples are sent to DREAM laboratory in Blantyre. The results are delivered to the health facility within one week of receipt of the samples at the laboratory.

Results

In Blantyre 22 health facilities are connected to the Laboratory for EID through a network managed by DREAM program. The laboratory received 558 EID samples and gave back 498 results to the health centre with turn around time of one week. Vertical transmission rate at one month was 3.6% (18/498). All HIV+ children were initiated on HAART. In the first month only 52.8% of guardians received the EID result while the second month the percentage increased to 62.1%.

Conclusions and recommendations

A well organized system of EID testing and follow up using expert clients and telecommunication technology is able to meet the increasing demand for early infant diagnosis and reduce attrition. Delivery of EID results to the mothers is a major challenge. There is need for well organized partnership between ministry of health and partners to meet increasing demand for PMTCT services.

Evaluation of a specialized psychosocial support intervention “teen club” in improving retention among adolescents on antiretroviral treatment (art) at Zomba Central Hospital (ZCH)

M. Agarwal, Edson Mwinjiwa, M. Van Lettow, J. Berman, C. Gondwe, A.K. Chan

Introduction

HIV+ adolescents are prone to poor adherence and ART failure. With the support of NAC/Baylor Children’s Foundation, a support intervention for HIV+ teens, was established at ZCH in April 2010. Teen Club(TC) provides teens on ART with dedicated Saturday clinic time, sexual
and reproductive health education, disclosure support, peer mentorship, and support for adherence. An evaluation was conducted to assess the impact of TC on loss to follow up (LTFU) of adolescents on ART.

Methods
A retrospective cohort study looking at baseline demographics and outcomes of adolescents registered at ZCH October 2004-June 2012, was conducted on data from MOH registers/mastercards. Clients who attended two Saturday TCs were the exposed group. LTFU was defined as having no clinic visit >60 days from expected FU date. Differences in retention among TC vs. non-Teen Club (nonTC) were assessed using Kaplan-Meier analysis and Cox proportional hazards regression adjusting for: age, sex, distance from hospital, reason for initiation, change in clinical status, duration on ART.

Results
In total, 192 adolescents in TC were compared with 750 nonTC teens. The two groups were significantly different (p<0.05) in median age [TC 12.4(IQR=4.4) vs. nonTC 19.8(IQR=8.6)]. Female sex [TC 48.9% vs. nonTC 25.4%], urban location [TC 78.1% vs. nonTC 55.1%] and change in clinical status. There was no significant difference in clinical status at initiation. NonTC adolescents had a hazard ratio of 4.9 for LTFU [95%CI:3.68-6.58] and adjusted hazard ratio on multivariate analysis of 3.05 [95%CI:2.04-4.59].

Conclusions and Recommendations
A specialized clinic for adolescents can improve ART LTFU among adolescents by creating a “positive space” for peer interactions and psychosocial support. In 2013, NAC is funding TC expansion to an additional 5 districts in the South East Zone. There are limitations to a retrospective analysis to evaluate impact. Planned roll out of TC is an opportunity to have a robust evaluation of impact on outcomes using prospective operations research design.

Electronic data capture methods
Kondwani Nkanaena, Andy Bauleni, Jacqueline Fiore, Jonathan Babbage, Don Mathanga, Terrie Taylor

Introduction
For decades, paper based collection of data has been the common data collection strategy in resource limited settings. With a proliferation of portable, electronic devices that can be used to for primary data capture from research participants, electronic data capture is becoming more attractive as a method of collecting biomedical data both in clinical and community settings.

Methods
We tested and implemented electronic data capture methods on personal computers, laptops, and tablets, compared paper based data collection methods to electronic data capture methods, and developed techniques to use the devices in the field to collect different varieties of data and to then upload the data to a centralized server.

Results
The Malawi ICEMR Project uses electronic devices such as laptops and tablets to capture data from study participants in clinical and community settings in Blantyre, Chikhwawa and Thyolo. The data capture applications used on the electronic devices are REDCap and ODK. The use of electronic devices ensures that research data is secure from unauthorized access through the use of passwords, maximizes efficiency as the data is ready for cleaning and analysis on the same day (provided it is uploaded into the centralized server), enables auto-capture of data that cannot be easily collected otherwise, such as GPS coordinates, and improves access to data since the data are available online to the research team as soon as it is uploaded to server.

Conclusions and Recommendations
Electronic data capture methods have benefits in terms of data accuracy, efficiency of data collection, cost, data security, ease of access, and data storage when compared to traditional paper-based methods and should be considered when research activities are planned.

Can third party reports strengthen the correlation between reported risky behaviors and HIV infection?
J. Mkandawire

Introduction
Accurate measurement of sensitive behaviors that put people’s health at risk is extremely difficult in surveys. Surveys rely on self-reports yet studies have shown that self-reported data suffers from social desirability bias where respondents may under or overestimate their behaviours. Recent studies have tested the use of third party reports to estimate the reliability of self-reported data. However, these new methods have not also been validated to ensure reliability of such methods. This study tries to validate respondents’ reports by using HIV test results. The aim of the study was to validate respondents and friends reports on sexual behaviour using their HIV test results.

Methods
On Likoma Island, using the Audio Computer Assisted Self Interviewing technique of data collection, the Likoma Network Study collected reports on respondents’ sexual behaviours including their friends’ and tested them for HIV. If respondents reported having had concurrent partners, HIV prevalence was expected to be higher among this group and if these results were not consistent with reports, such reports were defined as unreliable and vice versa.

Results
Overall, 923 respondents accepted to take part in the study, 69% accepted HIV testing while the remainder was either absent, refused or results were invalid. Looking at partner concurrency, we found that 22.6% of the general sample reported having had concurrent partners the year preceding the study and the majority were males 25% compared to 20% females. HIV prevalence was high in the cells that were holding what was described as reliable data in the friends’ sample than in the respondents’ sample.

Conclusions and recommendations
The friends’ sample was a better predictor of HIV prevalence than respondents’ reports. Women reports were more reliable compared to those from male respondents in
predicting HIV status. Our results indicate that biomarkers e.g. HIV test result may strengthen the third party method to validate survey reports.

Access to treatment, care and support for children living with HIV/AIDS in Blantyre – Limbe Central Nkhwachi Mhango and Tony Khanyepa

Introduction
Limbe Clinic is one of the clinics in Blantyre providing ART services and other health related services to the population around Chigumula, Chiwembe, Kanjedza, Soche, Mpingwe, Kachere, Nkolokoti, Makhetha, BCA Hill, Chinyonga and surrounding communities. The ART service targets 2400 HIV adult patients and 80 children aged between 0-18 years per month. The aim of the study was to establish how the impact of HIV/AIDS on children is being mitigated in terms of access to treatment, care and support hence explore ways on how to effectively improve the provision of care and support. The project targeted children living with HIV/AIDS accessing ART service at Limbe Health Centre

Methods
Interviews, interface with service providers, children living with HIV/AIDS, guardians and care givers

Results
1. Increased number of children living with HIV/AIDS
2. Most children not aware on why they are taking medication
3. Some children aged as little as 5-12 years come on their own to collect medicine without supervision
4. Lack of follow up and monitoring on whether the children are taking the drugs or not
5. Poor nutrition supplements for HIV positive children
6. Some HIV positive children are orphans and mostly miss their appointments.
7. Children living far away from the clinic do not collect their drugs regularly and in time
8. Lack of support services and groups targeting children living with HIV/AIDS

Conclusions and Recommendations
Parents and guardians should take full control and care of their sick children; Mobilization of resources to health facilities and support groups providing services to children living with HIV/AIDS; Training of more service providers on child counseling and training of care givers on preparation of food suitable for children living with HIV/AIDS.

Diagnostic factors spurring HIV/AIDS in the fisheries sector – A case of major fishing beaches in mangochi
A. Saukani

Introduction
Mangochi is the heart and hub of fishing industry in Malawi. Mangochi alone contributes 60 percent of total national fish production. The district has 14171 fishers owning over 3300 gears a highest record country wide. Intensity of fishing activities also spurs sexual interaction among players in the industry hence high occurrence of teen age pregnancies and spread of HIV/AIDS. Community’s livelihoods are also threatened by dwindling catches.

Methods
A study was carried in five active fishing beaches in Mangochi to establish level fisher communities perception on HIV/AIDS, safe sex and post infection management. Data was collected through FGDs, questionnaire to key informants and stakeholders. Fish business transactions in beaches and fishers social patterns consolidated on behavior observation.

Results
Despite acknowledgement of the pandemic, unprotected sex is prevalent due to non accessibility of condoms at the convenience of intercourse as these are not prearranged. Continued fish catch decline, is feared to escalate the pandemic mostly among female traders who are vulnerable to transactional sex in pursuit of sustaining their businesses. Misconceptions that male circumcision is a bullet proof to contracting the pandemic and role of condoms in premarital sex needs elaborate clarification. Proper condom handling and storage practices seem lacking and needs redress considering the difficult working conditions fisher forks are subjected to.

Conclusions and Recommendations
Transactional sex will be synonymous with continued fish catch decline hence sustainable fisheries management practices needs to be implemented. HIV/AIDS messages are streamlined within all fisheries stakeholders’ capacity without leaving the duty to the health sector alone. Fair trading practices and business diversification be advocated as a matter of putting a stop to transactional sex hence containing further spread of the pandemic.

Roadside market as a context for risky behaviors for young men
D. L. Jere, K Norr, C. Kaponda C. Bell, C. Corte, B. Dancy2 & J. Levy

Introduction
Substance use and HIV-related risky sexual behaviors are increasing among young men in Malawi. The purpose of this study was to describe substance use and HIV risk behaviors of young men who work as casual workers in a rural Malawi market and the contextual risk factorsthat contribute to these behaviors.

Methods
Using a qualitative ethnographic research design, three types of data were collected: systematic observations of the marketplace and surrounding establishments; interviews with eighteen key leaders knowledgeable about the marketplace; and in-depth interviews with fifteen young men, aged 18-25, who worked at the market. Interviews were conducted in Chichewa, audio-taped, transcribed, and translated into English. All data was analyzed using constant comparative method.

Results
There were three major findings of this study. First, there were three patterns of risky behaviors among young men working at this rural market. Six young men continued to engage in high risk behavior, six formerly engaged in risky behaviors but then discontinued the risky behaviors, and three never engaged in risky behaviors. Alcohol and marijuana were the two substances commonly used by young men. Second, substance use was linked to sex with multiple partners and the irregular use of condoms. Finally, factors at multiple levels influenced young men's risky behaviors. The market where young men worked put young men at high risk for substance use and risky sexual activities. The market offered high availability, accessibility and affordability of resources and services, including ready cash, substances for sale and commercial sex workers. Norms supporting risky behaviors were prevalent at the market, including the belief that using substances increased capacity for work. The market also had a lack of restraints, such as, guidance from elders and policies regulating availability of substances. Young men's substance use was also influenced by other factors. At the community and home environment level, poverty and lack of resources influenced young men to work at the market. At the interpersonal level, peer influences and having no parents or a single parent encouraged risky behaviors. At the individual level, lack of formal education, and early initiation of risky behaviors influenced young men's risky behaviors.

Conclusions and recommendations
This study identified the market as a risky environment for young men who work there. Young men working at a roadside market should be treated as a high-risk group who require intervention. Also, national policies and programs addressing substance use as a disease are needed.

Strategies for male involvement in the prevention of mother to child transmission of HIV services in Blantyre, Malawi
L.A. Nyondo, A.S. Muula and A. Chimwaza

Introduction
Despite the documented benefits of Prevention of Mother to Child Transmission of HIV (PMTCT) services, the uptake remains low in Sub-Saharan Africa. The lack of male involvement (MI) may be one of the reasons for this. However, there are limited data on strategies for MI in PMTCT. The purpose of this study was to identify strategies for MI in PMTCT services in antenatal care services in Blantyre Malawi.

Methods
A cross sectional qualitative study was conducted from December 2012 to January 2013 at South Lunzu Health Centre (SLHC) in Blantyre, Malawi. It consisted of six face to face Key Informant Interviews (KIs) with health care workers and four Focus Group discussions (FGDs) with 18 men and 17 pregnant women attending antenatal care at SLHC. The FGDs were divided according to sex and age. All FGDs and KIs were digitally recorded and simultaneously transcribed and translated verbatim into English. Data were analysed using thematic content analysis.

Results
Three major themes with several sub-categories emerged: i) Gate keeping strategy theme with two subcategories a) health care workers refusing service provision to women accessing antenatal care without their partners, b) women refusing antenatal care in the absence of a partner; ii) extending invitations theme with six subcategories a) word of mouth, b) card invites, c) woman’s health passport book invites, d) telephonic invites, e) use of influential people and f) home visits; and iii) Information education and communication theme through health education forums and advertisements. An invitation card addressed to the male partner was most preferred by study participants.

Conclusions and recommendations
There are several strategies by which men may be involved in PMTCT. Success of MI may require multiple interdependent strategies. Health care workers should offer a pregnant woman all strategies available for MI for her to select the appropriate one.

HIV prevention among deaf people under type of study on HIV AND AIDS for the target population deaf persons.
Petro S.

Introduction
HIV Prevention among deaf people” is one of the projects CHIYOSO operates with the aim of informing, mobilizing and educating deaf people about epidemic of HIV and AIDS through sign language. The programme is designed to mobilize the deaf people and bring them into action, so they can fight against HIV and AIDS and help each other to deal with the consequences. Despite massive HIV and AIDS programming in Malawi, deaf people have been shun by HIV certified counselors and health service providers due to communication barriers and as such they have no access to both sexual reproductive health and HIV and AIDS services. The small number of literate deaf people that have knowledge on some sexual reproductive health and HIV and AIDS services needs an interpreter when they seek the services hence no confidentiality. Lack of negotiating skills for safer sex among them in regards to communication barriers leads them to unprotected sex. Deaf women are enticed by men for unprotected sexual activities due to their ignorance.

Methods
The project reached out to the deaf persons with a systematic approach, where every single person is reach with a one on one education and makes a risk reduction plan of how he/she can be in control of the epidemic, referral, contraceptive education and distribution.

Results
The project increased knowledge and access to HIV and AIDS information among deaf persons and they received counseling and directed to places of services.

Conclusions and Recommendations
The project addressed HIV and AIDS information gap and it created more self-sufficiency and self-reliance within the blind community. There is a need to train more health
“Fighting against HIV AND AIDS for all” under type of study on HIV AND AIDS for the target population of blind persons which was implemented with funding from US embassy.

F.S. Geoffrey

Introduction

The project called “Fighting against HIV and AIDS for All” was designed following the survey which was conducted by CAPDI which indicate that Bangwe Township is among the townships which have many persons with various disabilities living at high level of contracting HIV due to social exclusion/stigma and discrimination communities impose on them in the context of HIV and AIDS. The most vulnerable being blind persons, therefore the project targeted them as the primary beneficiaries.

Methods

The project reached out to the blind persons with different methodologies such as; HIV and AIDS peer education training, group therapy, anti-AIDS club meetings, community awareness campaign, HTC mobilization and referral, IEC distribution (Braille booklet). Data collections used include; attendance lists, training evaluations, counseling and referral books.

Results

The project increased knowledge and access to HIV and AIDS information among blind persons and they received counseling and were motive to go for HTC services. Generally the project reduced social exclusion, myths and misconceptions about issues surrounding HIV and AIDS and blind persons.

Conclusions and Recommendations

The project addressed HIV and AIDS information gap and it created more self-sufficiency and self-reliance among the blind community. There is a need to mainstream programmes to address HIV and AIDS education and services for persons with disabilities and prioritize the development of materials and messages in sign language, Braille, large print and audio formats to meet the needs of individuals with disabilities.

Qualitative end-of-program results from the sage4 health study in rural central Malawi: participants’ perspectives on the impact of care village savings and loan associations on economic empowerment and HIV vulnerability

P. E. Stevens, L. Mkandawire-Valhmu, T. Mwenyekonde, L. W. Galvao, A. F. Yan and L. S. Weinhardt

Introduction

Poverty and gender disparity are recognized as determinants of HIV/AIDS. Yet, few have rigorously investigated if and how structural development programs may be changing the dynamics of HIV vulnerability. We evaluated the SAFE Program, an 18-month multi-level, economic and food security program implemented by CARE-Malawi in rural Kasungu District.

Methods

In the SAGE4Health Study we conducted a mixed-methods quasi-experimental non-equivalent control group longitudinal study to examine mechanisms and magnitude of impact of SAFE. Here we focus on the qualitative end-of-program evaluation providing participants’ perspectives on how the Village Savings and Loan (VSL) component of SAFE affected them. From among 600 program households surveyed, we purposively sampled 60 women and 30 men for interviews and focus groups. Data were analyzed thematically.

Results

Participants identified monthly saving, emergency loans, business education, start-up capital, and yearly dividends timed to the growing season as helpful as home. They experienced dignified, efficient loan processes when “problems fall suddenly,” business successes, and decreased necessity to seek ganyu (piecework). Further, dividends staved off crises during “hunger months,” and accrued financial benefit allowed purchase of livestock and other assets. There were new realizations that it is possible and acceptable that women do business and manage money. Both men and women indicated VSL may be increasing peace and stability at home.

Conclusions and Recommendations

Because of VSL, participants perceived improved household self-sufficiency, greater protection from economic shocks, and cumulative collective capacity to reap local benefits and meet community needs. Through VSL activities, gender issues were more explicitly discussed, women’s work was acknowledged, and more egalitarian gender relations were imagined. We cautiously suggest that economic literacy, enhanced livelihood strategies, and increased attention to gender, all thought to be important in reducing HIV vulnerability, may be enabled by VSL. These qualitative findings generate hypotheses for verification using our quantitative data (forthcoming 2014).

Age at circumcision and risk of HIV infection among men aged 15 to 54 in Malawi.

D.J. Ndhlovu

Introduction

The overall objective of this study was to investigate the relationship between age at circumcision and risk of HIV infection among men aged 15 to 54 in Malawi, so that only those ages with desired protective performance would be isolated.

Methods

The study was an analytical cross-sectional design, designed through secondary data of the 2010 MDHS datasets. A total of 3,692 men with known circumcision status were included in the analysis. 660 men were circumcised and 2,032 were uncircumcised.

The study was an analytical cross-sectional design, designed through secondary data of the 2010 MDHS datasets. A total of 3,692 men with known circumcision status were included in the analysis. 660 men were circumcised and 2,032 were uncircumcised.
Results
The results from the bivariate analysis showed that only religion, ethnicity, and concurrent sexual behavior were significantly associated with age at circumcision and HIV prevalence. From the multivariate logistic regression results, the odds of contracting HIV among Circumcised men were 1.657 times higher than it was for the non-circumcised men. The odds of getting infected with HIV among men who circumcised after puberty were 1.15 times that of among prepuberty circumcisions.

Conclusions and Recommendations
Evidence that male circumcision offers significant protection for men from HIV infection was not found in this country. Regardless of the absence of MC protective effect, prepubertal circumcisions were found to be at reduced risk compared to those that circumcised after puberty in the presence of other factors. Further investigations need to be conducted to find out why circumcised men have increased risk than the un-circumcised men. That is, if the evidence is found as expected then this study will recommend the Government of Malawi to prioritize and concentrate resources for prepubertal circumcisions.

Active case finding: a comparison of home-based testing and health center based testing for identifying HIV-infected children in Lilongwe, Malawi
Saeed Ahmed, Maria H. Kim, Amanda C. Dave, Kondwani Kanjelo, Avni M. Bhalakia, Peter N. Kazembe2

Introduction
Studies estimate that less than 10% of children overall and 20% of children of adult ART patients have been HIV-tested. Home-based HIV testing may improve early identification and enrollment into care of HIV-infected children. The objective of this study is to compare the effectiveness of home versus health center based HIV testing in identifying HIV-infected children.

Methods
The Tingathe community outreach program conducts both health center and home based HIV testing. Health center testing included both patient and provider initiated testing. Home testing included both routine door-to-door testing as well as solicited visits of family members of current ART patients. Children were generally offered testing only if the mother was infected. We evaluated testing data from March 2008 to March 2011.

Results
Of 37,983 HIV tests performed, 14,358 (37.8%) were conducted in patient homes. A total of 4501 (11.9%) new HIV-infected children were identified through home-based testing, the overall yield was seen in health center based testing, the overall yield of the home versus health center testing strategies were comparable. Both strategies will likely be important for a comprehensive approach to identification and enrollment of HIV-infected children. The children identified through the home based strategy may have been found earlier in their disease course, but further studies are necessary to compare clinical characteristics and outcomes of children identified through these differing strategies.

Conclusions and Recommendations
Our study demonstrates that though a higher prevalence was seen in health center based testing, the overall yield of the home versus health center testing strategies were comparable. Both strategies will likely be important for a comprehensive approach to identification and enrollment of HIV-infected children. The children identified through the home based strategy may have been found earlier in their disease course, but further studies are necessary to compare clinical characteristics and outcomes of children identified through these differing strategies.

Young people’s engagement in safe reproductive health and HIV/AIDS activities in Nyambi and Chikweo areas in Machinga
Sann Jali and Mervis Tsui

Introduction
The youth have been sidelined in most activities to do with sexual and reproductive health despite the fact that the youth are still face a lot of problems regarding their reproductive health and HIV/AIDS in Malawi. The purpose of the project was to involve youth in activities regarding sexual and reproductive health and HIV/AIDS by training them in reproductive health to disseminate information on family planning and HIV/AIDS to their communities.

Methods
A series of training were conducted with the youth in primary schools and communities on reproductive health issues including HIV/AIDS. They were also taught peer education skills how to distribute contraceptive to fellow youth in the communities and at school during sports activities. Furthermore they were taught how to formulate songs, drama and poems as a tool to disseminate the message to the community during different traditional functions. Teachers and service providers were trained in youth friendly health services to serve as Patrons of the youth clubs and supervisors respectively.

Results
The number of youths accessing family planning services at both community and facility level increased from 12% in 2009 to 28% in 2011. The preference rate among the youth in the areas declined from 4.7% (n=3539) in 2009 to 1.9% (n=1, 431) in 2011. The 2010 to 2011 family planning reports show that condom use increased from 147 to 202, pills 205 to 255, depo156 to 209, STI services 104 to 90, teenage pregnancy 22 to 12. The youth community based distribution approach increased the availability of contraceptive at the community level because the distributors were readily available at non-conventional places like football matches, community gathering and during night activities. There was also increased interaction and debate on modern family planning methods and ways of preventing the spread of HIV/AIDS as was noticed through youth clubs and social places.

Conclusions and Recommendations
It is important to engage adolescents in reproductive health initiatives as it makes the service accessible and acceptable by young people. Involving young people in addressing their reproductive health problems is vital since a good response is achieved in minimizing the problems they face which
eventually also affect their family well being. This has been scaled up in other areas by the engaged young people.

Genetic variation in mitochondrial DNA among adult MALAWIAN HIV/AIDS patients is associated with stavudine toxicity
Elizabeth Kampira, Johnstone Kumwenda, Joep J van Oosterhout, Collet Dandara

Introduction
In the last 5 years Africa has become an ‘epicenter’ of genomics research, through initiatives such as Human Heredity and Health in Africa study (H3Africa). Few pharmaco-genomic data have yet been generated in Malawi. We investigated the role of variation of mitochondrial DNA (mtDNA) among adult Malawian HIV/AIDS patients in the development of stavudine toxicity.

Methods
Two hundred and fifteen (n = 215) adults on stavudine containing regimens for >23 months in Queen Elizabeth Central Hospital, Blantyre were recruited into a cross-sectional study. Peripheral neuropathy was diagnosed on the basis of characteristic symptoms that had started before stavudine initiation and lipodystrophy with a validated questionnaire (combining patients’ self-report and clinician’s inspection of 7 areas). Whole mitochondrial DNA coding regions of each patient were sequenced, CD4 count and viral load determined. Associations between mtDNA subhaplogroups and clinical characteristics, including peripheral neuropathy and lipodystrophy were analyzed with multivariable logistic regression.

Results
Nine mtDNA subhaplogroups were observed. The Malawian ethnic groups shared similarities in subhaplogroup distribution with other groups from southern and southeastern Africa. Subhaplogroup L1a2 (OR 2.23; P= 0.019) was associated with increased risk of peripheral neuropathy, while subhaplogroups L2a was associated with reduced risk (OR 0.59; P= 0.036). Subhaplogroup L3c was not observed among patients with lipodystrophy.

Conclusions AND Recommendations
Our data suggest that mtDNA subhaplogroups are associated with differential risk of stavudine-associated mitochondrial toxicity, while the ideal of individualized drug therapy on the basis pharmaco-genetic screening may not be applicable in Malawi in the near future, further understanding of the genetic background of responses to medications could improve the choice of standardized regimens in different populations.

Implanenting option B+ for prevention of mother to child transmission at bwaila maternity unit, lilongwe: the first 18 months
C Speight, S Phiri, W Ng’ambi, H Tweya, C Man-Bourdon, M Hosseinpour

Introduction
Bwaila Maternity Unit, the busiest in Malawi (>15,000 deliveries/year) began implementing Option B+ in
September 2011. All services were integrated into antenatal and postnatal care services.

Methods

At ANC registration, all women not known to be HIV+ received group pre-test counselling (often >100/day), HIV testing and individual post-test counselling. HIV+ women were counselled and commenced on TDF/3TC/EFV at the same visit, and reviewed monthly until one year post-delivery, then transferred to the adjacent Martin Preuss ART clinic. Additional adherence and psychosocial support was provided by Mothers-2-Mothers. Women who defaulted were actively traced and encouraged to return using SMS, then phone, then field tracing if necessary. From October 2012, viral load screening was performed on all women more than six months on ART. Newborns received nevirapine for six weeks and were enrolled into the Early Infant Diagnosis programme.

Results

Acceptance of HIV testing was >99% and seroprevalence was 14%. By end of March 2013, 1691 pregnant women and 207 lactating women had started ART, and 767 were already on ART prior to pregnancy. ART initiation was universal, being provided at the time of diagnosis, but retention at six months was 70%. Although lower than the national average (82%) most other sites defer ART till a follow up visit, hence initiating fewer, but retaining more. Of women remaining in care, 94% had adherence of >95%, and 96% of women were fully virally suppressed at six months or beyond. By end February 2013, 1034 infants had received PCR testing, with 22 confirmed positives (2.1%)

Conclusions And Recommendations

Virologic suppression among women retained on ART in Option B+ program was very high and paediatric HIV infections were uncommon. However, early defaulting, primarily after the first ANC visit, was high emphasizing the need for strategies to provide adequate psychosocial support early in the ART initiation process.

A qualitative assessment of health seeking practices among and provision practices for men who have sex with men in Malawi

AL Wirtz, V Jumbe, D Kamba, G Trapence, R Gubin, E Umar, SK Strömdahl, C Beyrerl, S Baral

Introduction

In the context of a generalized epidemic and criminalization of homosexuality, men who have sex with men (MSM) in Malawi have a disproportionate burden of HIV compared to other adults. Past research has documented low uptake of HIV prevention and health services among MSM, self-reported fear of seeking health services, and concerns of disclosure of sexual orientation and discrimination in health settings.

Methods

We conducted participatory qualitative research among MSM and health service providers in Blantyre, Malawi to understand the underlying factors related to disclosure and health seeking behaviors and inform the development of a community-based comprehensive HIV prevention intervention. Using peer and key informant recruitment, a total of eight in-depth interviews were conducted among MSM participants representing a range of ages, social and behavioral characteristics, sexual orientations (gay, bisexual, heterosexual), and marital patterns (with a woman). A total of five service provider participants were recruited from the district hospital, local public health clinics, STI research clinics, as well as from a HIV prevention service organization. We use the Health Belief Model as a framework to interpret the influential factors on 1) health seeking and uptake among MSM, and 2) influences on provision of services by healthcare providers for MSM.

Results

Results highlight disclosure fears among MSM and, among providers, a lack of awareness and self-efficacy to provide care in the face of limited information and political support. Service providers reported concerns of adverse repercussions related to the provision of services to men in same sex sexual relationships. Some MSM demonstrated awareness of HIV risk but believed that within the wider MSM community, there was a general lack of HIV information for MSM, low awareness of appropriate prevention, and low perception of risks related to HIV infection.

Conclusions And Recommendations

Qualitative research highlights the need for appropriate information on both HIV risks and acceptable, effective HIV prevention options for MSM. Information and educational opportunities should be available to both the wider MSM community as well as within the health sector. Health sector interventions may serve to increase cultural and clinical competency to address health problems experienced by MSM. Finally, to ensure availability and use of services in light of the criminalization and stigmatization of same sex practices, there is need to increase the safety of uptake and provision of these services for MSM.

Development and pilot implementation of a tb-art integrated electronic medical record system in Malawi

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Introduction

Tuberculosis is one of the major health problems in Malawi exacerbated by HIV/AIDS. Out of 87 percent of TB patients with known HIV status, about 66% are HIV positive. Management of information of patients on concurrent TB and HIV/AIDS treatment has proved to be challenging. Baobab Health Trust, Lighthouse Trust, University of Bern and Ministry of Health collaborated to develop a TB-ART Integrated Electronic Medical Record system.

Methods

A user-centered approach was followed in order to develop an electronic medical record (EMR) system for co-management of TB/ART patients. This process consisted of patient workflow mapping and analysis. Identified workflows were then translated into functional specifications for development of the system. These specifications were then implemented as an extension to the existing ART EMR system.
Results
Four (4) distinct patient flows were identified based on a TB registry in the central region of Malawi. These include TB suspect, new TB patient, TB follow-up and TB transfer-in patient. These scenarios were developed as a TB-ART module. The TB-ART module has been implemented at the Martin Preuss centre which is a busy clinic in Lilongwe.

Conclusions And Recommendations
The implementation of the TB-ART EMR has demonstrated that it is feasible to develop and deploy a TB-HIV Integrated EMR in a resource poor setting. Since more TB-ART co-infected patients are now managed within the ART clinic, it is recommended to have the TB-ART module deployed to other ART clinics so that co-infected patients are more easily managed.

The link between hiv infection in women and maternal mortality: a comparative analysis of Malawi and its neighbors
O. Maganga

Introduction
It is widely acknowledged that Malawi has one of the highest maternal mortality rates in the world. Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy from any causes related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. Empirical work indicates that HIV infection is becoming the major cause of maternal mortality in Sub Saharan Africa. The percentage of AIDS related maternal deaths for Malawi, Mozambique, Zambia and Tanzania are so alarming with rates as high as 29.3%, 26.8%, 30.7% and 18% respectively.

Methods
The study estimated a pooled regression model using HIV and maternal mortality data for Malawi and its neighbors.

Results
The fixed effects model indicates that a 1% increase in the number of women infected with HIV increases maternal mortality by approximately 0.09, 0.05, 0.1, and 0.03 percentage points in Malawi, Mozambique, Zambia and Tanzania respectively.

Conclusions And Recommendations
The study recommends that if maternal deaths are to be significantly reduced there is need to increase knowledge of HIV status and equitable access to medical care amongst pregnant women, particularly those in areas with poor health facilities.

Prevalence of depression amongst hiv infected adolescents in Malawi

Introduction
Depression is the most commonly occurring psychiatric disorder among people living with HIV and AIDS (PLWHA). Children and adolescents are particularly vulnerable to depression with reported prevalence estimates as high as 28%. Most depression studies in youth come from high-income countries, with a scarcity of data regarding depression coming from the epicenter of the HIV pandemic -Southern Africa. The objective of the study was to determine the prevalence of depression among HIV infected adolescents aged 12-18 years in Malawi.

Methods
A cross-sectional design with a descriptive quantitative approach was used. HIV-infected adolescents presenting for routine care at antiretroviral treatment (ART) clinics at Baylor and Zomba (Central and Southern Malawi, respectively) were invited to participate in the study. Two depression screening instruments were used; Beck's Depression Inventory-II (BDI-II) and Children's Depression Inventory-II-Short (CDI-II-S). A clinical interview using the Children's Depression Rating Scale-Revised (CDRS-R) was used to confirm the diagnosis of depression. Chi-Square tests were used to compare the categories of depression between males and females.

Results
Out of the targeted 700 participants, 80% (562) completed the questionnaires. Of these, 93.1% (523) were on ART. Their mean age was 14.5 years. Using the BDI-II (cut-off 17), 25.6% (144) were determined to be depressed, with 15.1% (85) rated to have moderate to severe depression. Suicidal symptoms were expressed in 7.1% (40) of the participants with 1.1% (6) expressing severe suicidal symptoms. The CDI-II-S showed that 20.8% (117) were depressed. Finally, using the CDRS-R, the clinical assessment, 18.9% (106) were determined to be depressed. There was no difference between prevalence of depression amongst males and females by all three measures.

Conclusions And Recommendations
This study demonstrates a high prevalence of depression amongst HIV-infected adolescents in Malawi. Additional research investigating factors associated with depression are needed in order to inform the development of effective interventions.
Use of finger-prick Dried Blood Spots (DBS) for quantifying HIV-1 viral load: a diagnostic accuracy study conducted in Thyolo, Malawi

Carol Metcalf, Emmanuel Fajardo, Pieter Pannus, Laura Triviño Duran, Isabella Panunzi, Tom Ellman, Rebecca Coulburn, Abram Kamisa, Reuben Mbewa, Pascale Chaillet

Introduction

Viral load monitoring of HIV-infected patients on antiretroviral therapy (ART) is useful for early detection of treatment failure but is currently not available in most resource-constrained settings. As possible alternatives to plasma for quantifying HIV-1 viral load, we assessed the diagnostic accuracy of viral load measured on finger-prick and venous DBS samples compared to plasma.

Methods

The study was conducted at Thyolo District Hospital in southern Malawi. Consenting patients aged 15 years who had been taking ART for 6 months provided EDTA-anticoagulated venous blood and finger-prick blood samples. Laboratory technologists prepared finger-prick DBS, venous DBS, and plasma samples, and measured viral load using a NucliSENS EasyQ HIV-1 analyzer (bioMérieux). DBS results were corrected for haematocrit using a value of 0.45.

Results

488 patients (median age: 39 years, 59.6% female) participated, of whom 28.1% had suspected treatment failure. Compared to plasma, viral load in finger-prick DBS samples had a sensitivity of 90.8% (95% CI: 83.3 – 95.7%) and specificity of 96.7% (95% CI: 94.3 – 98.2%) at a 1,000 copies/ml cutpoint; and a sensitivity of 88.8% (95% CI: 79.7 – 94.7%) and specificity of 100% (95% CI: 99.1 – 100%) at a 5,000 copies/ml cutpoint. Calculated negative predictive value of finger-prick DBS for ruling out a viral load 1,000 copies/ml was 99.6% if 10% were above the threshold, and 97.7% if 20% were above the threshold. Results were similar when viral load in venous DBS specimens was compared to plasma.

Conclusions and Recommendations

Finger-prick DBS and venous DBS may be used as an alternative to plasma for quantifying HIV-1 viral load. Use of finger-prick DBS should be considered in settings remote from a laboratory, particularly settings with a shortage of health-workers to draw blood, infrequent specimen transport, or difficulty in maintaining the cold chain when transporting specimens.

Effectiveness of insecticide-treated bed nets to reduce the risk of malaria in children in an area of Malawi with pyrethroid resistance


Introduction

Insecticide-treated bed nets are the cornerstone of malaria control in sub-Saharan Africa, but ITN effectiveness may be compromised in areas of pyrethroid resistance. In 2011, WHO resistance assays with Anopheles funestus, found mortality at 24 hours to be 0-48% for deltamethrin and 72% for permethrin in Machinga District. We conducted a cross-sectional survey prior to the start of an observational cohort study to calculate the protective effectiveness of ITNs among children who did and did not sleep under ITNs.

Methods

Households in six rural villages of Machinga District were censured and children aged 6 to 59 months were invited to participate. At enrollment, ownership, use and condition of ITNs was assessed by caregiver verbal report, and children provided blood samples for PCR.

Results

Out of 1,667 participants, 1,200 (72%) met the inclusion criteria and consented for enrollment. A total of 443 (37%, [95% CI, 34-40%]) children were parasitemic by PCR. ITNs were used by 516 (45%) children, untreated bednets (UTNs) were used by 388 (34%) and 253 (22%) children reported not using any bednet the night before the survey. Holes were noted in the ITNs of 302 (59%) children and in UTNs of 304 (78%) children (p<0.001). Using a log-binomial model controlling for age, household wealth, maternal education and the number of bednets within a 300m radius of the child’s household, the PE of ITNs compared to no bednets was 25% (95% CI 10-37%) and the PE of UTNs compared to no bednets was 30% (95% CI 14-42%).

Conclusions and Recommendations

Despite to pyrethroid resistance in this area, ITNs were effective at reducing the risk of malaria parasitemia in children compared to no bednets. UTNs, however, were equally effective at reducing the risk of parasitemia in children, raising questions as to the mechanism by which ITNs may be protecting children against malaria.

Reservoirs of asymptomatic Malaria parasitemia in Malawi: Results of two cross-sectional studies.


Introduction

Malaria surveillance in endemic countries typically focuses on young children who are at highest risk of malaria morbidity and mortality. As we develop malaria elimination strategies, it is critical to expand our understanding of asymptomatic individuals who may act as reservoirs for transmission. The Malawi International Center for Excellence in Malaria Research has conducted cross-sectional surveys at the end of rainy and dry seasons in three districts. We aim to compare prevalence of total and asymptomatic malaria infection in the 2012 dry and 2013 rainy seasons by setting and to assess risk factors for asymptomatic parasitemia.

Methods

Districts were selected to represent different transmission settings: urban, highland (Blantyre City), rural, lowland (Chikhwawa), and semi-rural, highland (Thyolo). We randomly selected 30 households in 10 enumeration areas
(EAs) in each district. Demographic, malaria intervention, and current health status data were collected through household interviews; filter paper blood samples were obtained from all individuals over six months of age for polymerase chain reaction (PCR) identification of Plasmodium falciparum.

Results
Among 5784 individuals with PCR results in Blantyre, Chikhwawa, and Thyolo, total parasite prevalence was 5.0%, 19.8%, 9.9% in dry and 8.4%, 29.5%, 14.3% in rainy seasons respectively. Among parasitemic individuals, the majority of infections were asymptomatic in both seasons and proportion of asymptomatic infections did not differ significantly between seasons. EA prevalence estimates varied within districts. Using logistic regression to assess risk factors for parasitemia, after controlling for district and season, considering age, education, house construction, net ownership, and indoor residual spraying, age range 5–15 years was most strongly associated with both parasitemia and asymptomatic parasitemia compared to the <5 year group.

Conclusion and Recommendations
In Malawi and potentially other endemic settings, school-age children represent important reservoirs of asymptomatic infection. Subdistrict variation in prevalence should be considered for targeting interventions to interrupt transmission.

Evaluation of paramax 3 malaria rapid diagnostic test in the identification of Plasmodium species causing Malaria in Malawi.

Introduction
The Ministry of Health recommends the use of Malaria Rapid Diagnostic Tests (RDTs) in the health care delivery system. Currently recommended RDTs are SD Bioline and New Paracheck. The aim of the study was to evaluate if a new RDT, Paramax-3 can detect and identify different species of Plasmodium.

Methods
250 participants were recruited in Lilongwe at Bwaila Hospital outpatient department (ages 2-63 years), of which 17% were under five. Blood was collected for testing using RDT, microscopy and PCR. RDT was compared to PCR as the gold standard.

Results
Overall sensitivity and specificity of RDT were 100% and 83% respectively. Microscopy also compared well to RDT and PCR, with an average of 96% compared to RDT, as well as 95% compared to PCR. However, Speciation was not done in microscopy. The study confirmed the presence of P. malaria (5%) and P. ovale (2%) apart from P. falciparum (93%) in Malawi. No P.vivax was detected by any of the three methods. Anti-malaria treatment history had no significant effects on the results of both the RDT and PCR.

Conclusions and Recommendations
Paramax-3 proved valid, reliable and easy to use in malaria-endemic countries. The 100% sensitivity of the new kit exceeds recommendations of 95% for confident diagnosis of malaria in routine outpatient department. The ability of Paramax-3 to detect other Plasmodium species would increase confidence in a negative test. The simple and easy to use nature of this test would enable any health staff to be trained to use and interpret the tests accurately.

Indoor residual spraying (irs) impact after 4 years on Malaria indicators in Nkhoma health delivery area
D.Pemba, P.Kawale, R. Ter Haar, E.de Jonge, C.Kulanga, L.Munthali

Introduction
The Malawi Malaria indicator survey indicated a reduction from 50% to 34% from 2010 to 2012 in the central region. This study was to assess the impact of IRS in 2012 on malaria transmission in Nkhoma after 4 consecutive years of spraying.

Methods
Rapid Diagnostic tests (SD Bioline) as well as fever and anemia (using Hemocue Hb 201+ Analyzer) to monitor malaria was used. The study used purposive sampling of clusters where villages were cluster units targeting children aged below five years with no recent malaria. A complete listing of households was done for the study in 2010. The list of households and its population served as a sampling frame. The sample size was calculated at approximately 194 under five children (N=10283) from the study area (p=0.05). The assumption was made that all factors before insecticide spraying were similar in the villages.

Results
The malaria antibody tests data indicated that in the valley (800-1000m above sea level) the malaria prevalence reduction was from 75 to 39%, in the plain villages(1050m) 70% to 10% and the upland (1100-1200m) a reduction from 63% to 2%. The average prevalence in villages used for monitoring is at 15 % as compared to 68% before IRS. This represents a 53 percent reduction in P. falciparum infection in children. The insecticides used in Nkhoma IRS program are pyrethroid. After 2012-2013 spraying round, sensitivity test was carried out. The knock down rate for both Fendona and Icon insecticides used is still above the desired 80 %.

Conclusions and Recommendations
IRS has a dramatic impact on the malaria prevalence but more marked in the areas above 1100m above sea level. IRS should be considered in other districts of Malawi not adherent to the lake as a way to reduce the burden of disease and possibly eradicate malaria in higher altitudes.

Reduced children’s ward admissions in Nkhoma hospital after community Malaria prevention initiatives.
P.Kawale, R. Ter Haar, S.Kabota, L.Munthali, R.Morton, C.Kulanga, N.van Elteren

Introduction
The Malawi Malaria indicator survey indicated a reduction from 50% to 34% from 2010 to 2012 in the central region.

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Nkhopa has for the last 4 years had an indoor residual spraying (IRS) program. The hospital also partook in the distribution of Long lasting insecticide treated bednets (ITN) in May 2012 in the Nkhopa community.

The hospital has since 2011 introduced AFYA-PRO computerized patient registration system. The hospital catchment population benefits from a service level agreement for under five children that started in 2009 giving free care for this population group.

**Methods**

The objectives was:

- To compare the number of admissions in 2 years to the children's ward in the same months.
- To evaluate if malaria community interventions has made any differences to the children's ward admission diagnosis in 2 consecutive years.

The number of children admitted to the Nkhopa children's ward from January 2012 to June 2012 was compared retrospectively with admissions in January 2013 to June 2013 using the AFYA-PRO system computerized patient registration system.

**Results**

The AFYA-PRO system indicated that the majority of children admitted to the Nkhopa hospital children's ward had complicated malaria. The comparison that was done between January and June of the year 2012 and 2013 of the number of children admitted to the Nkhopa children's ward indicated, that on average, 61.3% less children were admitted.

It was noted that January 2013 and May 2013 showed the most marked reductions of 75% and 80% respectively.

**Conclusions and Recommendations**

The assumption is that the service level agreement made it easy for mothers to still bring their children to the hospital. No significant staff or hospital operations changes were noticed in the time period under discussion. The distribution of bed nets and the IRS combined likely contributed to a dramatic reduction in children admitted to Nkhopa hospital. IRS and ITN should be considered in other districts of Malawi as a malaria reduction strategy in reducing the burden of disease and reducing work load of an understaffed nursing health care system.

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**Estimating productivity cost of morbidity using the Malawi integrated household survey**

**Kaumba A. A.B.**

**Introduction**

Productivity cost of morbidity refers to the output loss corresponding to the reduced labor input due to health problems. Morbidity accounts for numerous hours lost from work due to absenteeism and presenteeism. Productivity cost is valued as an indirect cost in economic evaluation of healthcare interventions that adopt societal perspective. Estimation of productivity cost of morbidity puts a huge financial burden on stakeholders as special data is required to generate estimates. This study explored the opportunity of estimating productivity cost of morbidity using the integrated household survey (IHS) data or living standards measurement survey (LSMS) data in absence of special data.

Using HIS-3 data, Productivity cost of Malaria, Tuberculosis, Acute Diarrhea and HIV and AIDS have been estimated.

**Methods**

The human capital approach has been employed in estimating productivity cost of morbidity. This was done by multiplying the number of days lost per month due to morbidity with the wage per day. The heckman selection model was employed to correct for possible selection bias that exists in wage determination. Determinants of productivity cost of morbidity are explained through a multivariate linear regression.

**Results**

The model has revealed that on average, productivity cost of morbidity is MK12723.55 per month. It is also estimated that productivity costs of Tuberculosis (TB), Malaria, Diarrhea and HIV and AIDS are MK14736.92, MK5001.64, MK4520.09 and MK10332.82 per month, respectively.

**Conclusions and Recommendations**

Policy makers can use IHS data and/or LSMS data to estimate productivity cost of morbidity when conducting an economic evaluation of health care interventions in absence of special data. These estimates can be used as proxies’ for disease burden as saved costs due to reduction of disease occurrence after implementation of healthcare interventions.

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**Prevalence of refractive errors among students at Malawi college of health sciences, Lilongwe campus**

I.Kabwaza and D. Kaphle

**Introduction**

Refractive errors are common in health science students, probably because of their long study hours. However, there is no any known study on prevalence of refractive error among students at Health Science College in Malawi. The study was conducted to find the baseline information of refractive error among them.

**Methods**

A descriptive cross-sectional study was conducted with a sample size of 200 students. A complete eye examination included Visual Acuity, +1.00 test, retinoscopy, subjective refraction, and ophthalmoscopy test. The criteria used to consider refractive error were +0.75 dioptre sphere for hyperopia, -0.75 dioptre sphere for myopia, and a -0.75 dioptre cylinder for astigmatism.

**Results**

Out of 200 students, 61 (30.5%) had refractive errors. Simple hyperopia was the most common (34.4%) type of refractive error. There was no difference in prevalence of refractive error with respect to gender, being (31.6%) and (30.1%) for females and males respectively. Almost three quarters (73.7%) of students who had refractive error were between 15 and 25 years of old. Biomedical sciences students had higher (48%) prevalence of refractive error than the students of other programs.

**Conclusions and Recommendations**

Nearly a third (30.5%) of students had refractive error which was more prevalent in 15 to 25 years. Students should go
for full eye examination including refraction before they start school. Education on signs and symptoms of refractive errors may help to detect the condition early. Bigger sample size study is needed to establish the findings of this study.

**Viral load screening at Lighthouse a cost/utility comparison of targeted VS routine screening**

F. Nanga, C. Speight, S. Phiri, H. Tweya, C. Chavula

**Introduction**

Lighthouse Trust, a tertiary referral HIV clinic with over 22,000 patients on ART, commenced routine viral load (VL) screening in August 2012. Targeted VL screening, for suspected treatment failure, has been available for many years.

**Methods**

Clinically failing patients received targeted VL testing (deferred if adherence poor). Routine VL testing was performed on well patients as they reached the screening milestones defined by the MoH (6 months, 2 years, 4 years, 6 years etc). All viral load results between August 2012 and August 2013 were reviewed and analysed.

**Results**

Out of 6215 routine samples, 8% were >5000. Out of 502 targeted samples (same time period) 31% were >5000.

**Conclusions and Recommendations**

Approximately 70% of clinically failing patients had virological failure excluded, providing ample justification for the national policy of mandatory VL testing before switching to second line. Switching these patients to second line would do no good, and much harm, by distracting the clinician from seeking the true cause of the deterioration. This large percentage does not represent poor judgement by clinicians, but demonstrates that there are many causes for clinical deterioration other than virological failure.In this context, all targeted VL results (ie: 100%) significantly impact on clinical management, whether high or undetectable. With routine screening, 8% were clinically useful, while 92% merely provided expensive reassurance. Given that the costs, consumption of reagents and workload are the same, from a cost/utility perspective, targeted VL screening has 12 times the value per test compared to routine screening. Switching to second line ART should not occur without confirmatory VL. This should become more feasible given the imminent roll-out of VL testing using DBS. While routine VL screening remains the ‘gold-standard’ of HIV care, in situations where capacity, cost or availability of supplies constrain testing, targeted VLs should be prioritised.

**Shifting human resources for health in the context of art provision in primary care facilities: qualitative and quantitative findings from the Lablite baseline study**


**Introduction**

Lablite is an implementation project studying decentralized ART roll-out in rural communities in Malawi, Uganda and Zimbabwe. In the context of a Health Care Worker (HCW) shortage, evaluating Human Resources for Health (HRH) optimization is essential.

**Methods**

A baseline cross-sectional study was conducted on a purposeful sample of 81 health facilities representing different regions and facility levels at different stages of ART provision. Thirty three (33) focus group discussions were conducted in Malawi and Zimbabwe.

**Results**

No physicians were working in the primary care facilities evaluated. In Malawi and Uganda all but one had 1 medical assistant/clinical officer, with a median (range) of 4(1-15) and 2.5(0-16) nurses/midwives per facility respectively. Estimated turnover was higher in nurses/midwives than clinical officers in Malawi (32% vs.21% per year) and Uganda (19% vs.8% per year). In Zimbabwe, primary care facilities were staffed by nurses only (median 6(2-27); turnover 5% per year). In Malawi primary care, 57% of non-administrative staff were community HCWs (median (range) 18(0-31) per facility)-compared to 2% in Uganda and 12% in Zimbabwe. Only 6/16, 14/21 and 1/16 primary care facilities in Malawi, Uganda and Zimbabwe respectively had a laboratory technician/assistant. Few HCWs had undergone ART provision training; shortage of trained staff and increased number of ART patients was linked to increasing working-hours, overcrowding of facilities and reduction in service quality. Low job satisfaction was linked to low incomes, inequitable training opportunities and increased workload.

**Conclusions and Recommendations**

Shortage of staff challenges the roll-out of decentralized care. Lack of facilities and trained laboratory technicians limit the use of laboratory tests. In Malawi, Health Surveillance Assistants are assuming roles previously performed solely by professional HCWs. Support for continuing education for all cadres may improve HCW morale. HRH planning and forecasting, optimization of existing HCWs’ performance is critical for supporting the increasing numbers of ART eligible patients.
An audit of admissions to intensive care unit at a tertiary public hospital in Malawi

R. Gundo, E.S. Lengu, O. Mtalimanja, D. Chipeta, C. Kadyaudzu

Introduction

Intensive care practice is still undeveloped in developing countries despite the increased burden of illnesses requiring intensive care. Although the challenges to intensive care practice have been highlighted, there is limited information on admissions and treatment outcomes in Intensive Care Units (ICU) in these countries. The objectives of this study were; to describe the profile of admissions; to describe treatment outcomes of the admissions and to identify predictors of mortality in ICU at Kamuzu Central Hospital in Malawi.

Methods

A retrospective audit of admissions to the ICU for a period of one year, January to December, 2012 was undertaken. The patients’ admission book and case files were reviewed to extract data guided by a data extraction form developed for the study purpose. The extracted data included age, sex, referring unit, diagnosis, treatment outcome and length of stay. The results were analysed using SPSS, version 16 and STATA, version 10.

Results

A total of 253 patients were admitted to the ICU. Majority of the admissions, 33.6% (n=85) were postoperative surgical patients. There were 154 deaths representing an overall mortality of 60.9%. Sepsis was the commonest cause of death, 39.6%, (n=61). Younger age <40 years and increased patients’ length of stay in the unit were associated with increased mortality (p<0.05).

Conclusions and recommendations

The high mortality among patients admitted to ICU reflects numerous challenges at various levels of critical care service delivery in the country. There is need to strengthen critical care services to meet the current demand for the services and improve treatment outcomes for patients admitted to ICU. The findings provide areas for improvement in this regard.

Ocular findings in albinism in Kawale Health Center AND Kamuzu Central Hospital in Lilongwe

D. Bonongwe and D. Kaphle

Introduction

People with albinism suffer from many eye problems in addition to skin problems. The study was aimed to find out the major eye conditions found in albinism.

Methods

A cross-sectional study which included 31 people with oculocutaneous albinism of age between 7 and 40 years. All the participants went through complete ocular examination including Visual acuity, Hirschberg corneal reflex and refraction test. Photophobia and nystagmus was observed. Data was analyzed using Microsoft excel 2007.

Results

Out of 31 participants, 28 (90.3%) had refractive errors. Compound hyperopic astigmatism and simple hyperopia were the common types of refractive error, accounting 38.5% and 26.9% respectively. The majority (94.1%) of refractive error was found in less than 15 years age group. In males, the refractive error was found in 92.3% participants whereas only 88.8% of females had refractive error. The most common ocular problems found were photophobia (93.5%) followed by refractive error (90.3%) and nystagmus (90.3%).

Conclusion and Recommendations

The findings provide areas for improvement in this regard.
The most common ocular problem found in albinism was photophobia (93.5%). Compound hyperopic astigmatism 10(38.5%) was the most common refractive error among people with oculocutaneous albinism. People with Albinism should have access to the low vision services since the vision after refraction does not improve much. They should also be advised for the use of non-optical devices.

Analyses of susceptibility genes for epilepsy from maternal peripheral blood lymphocytes
Dhanuj, P.Manikantan

Introduction
Epilepsy is a severe neurological disorder affecting 0.4-1% of the population worldwide. It is characterized by impairments in the perception of reality and by significant social or occupational dysfunction. The disorder is one of the major contributors to the global burden of diseases. Studies of twins, families, and adopted children point to strong genetic components for Epilepsy, but environmental factors also play a role in the pathogenesis of disease. Molecular genetic studies have identified several potential positional candidate genes. The strongest evidence for putative Epilepsy susceptibility loci relates to the genes encoding clathrin interactor 1. Furthermore, these variants also seem to affect the functioning of the working memory. Fetal events and obstetric complications are associated with Epilepsy. Rh incompatibility has been implicated as a risk factor for Epilepsy in several epidemiological studies. We conducted a family-based candidate-gene study that assessed the role of maternal-fetal genotype incompatibility at the RhD locus in Epilepsy.

Methods
We have studied the role of three potential candidate genes by genotyping 28 single nucleotide polymorphisms in the DNTBP1, NRG1, and AKT1 genes in a large Epilepsy family sample consisting of 78 families with 145 affected individuals.

Results
We have previously identified a region on chromosome 20q21-34 as a susceptibility locus for Epilepsy. Recently, two studies reported association between the g-aminobutyric acid type A receptor cluster of genes in this region and one study showed suggestive evidence for association with another regional gene encoding clathrin interactor 1. Furthermore, these variants also seem to affect the functioning of the working memory. Fetal events and obstetric complications are associated with Epilepsy. Rh incompatibility has been implicated as a risk factor for Epilepsy in several epidemiological studies. We conducted a family-based candidate-gene study that assessed the role of maternal-fetal genotype incompatibility at the RhD locus in Epilepsy.

Conclusions and Recommendations
In conclusion, in this study we found evidence that one GABA receptor subunit, GABRG2, is significantly associated with Epilepsy. Furthermore, it also seems to affect to the functioning of the working memory. In addition, an RhD maternal fetal genotype incompatibility increases the risk of Epilepsy by two-fold.

Evaluation of causes of low vision in patients
attending low vision clinic at Lions Sight First Eye Hospital in Lilongwe
T. Nyasulu and D. Kaphle

Introduction
Low vision contributes to the major portion of total blindness in the world. However, there are not many studies done to find the causes of Low Vision in Malawi. The study aimed to find the baseline data on causes of low vision.

Methods
Non-intervention retrospective study was done using purposive sampling method. One hundred and eighty five patients who attended the low vision clinic at Lions Sight First Eye Hospital between 2010 and 2013 were included in the study. The data collection sheet was developed, which included age and gender of the participants, causes of low vision and the type of low vision devices prescribed. Data were analyzed using Microsoft excel 2007.

Results
Out of 185 study subjects, 111 (60%) were males and 74 (40%) were females. Uncorrected Aphakia (20%), Refractive errors (15.14%) and Glaucma (14.59%) were the most common causes of low vision among all participants. Uncorrected aphakia (23.42%) was the major cause of low vision in males whereas glaucoma (13.83%) was the major cause in females. Uncorrected refractive errors (33.33%), albinism (28%), glaucoma (40%) and uncorrected aphakia (40%) were the major causes of low vision in less than 15, 15 to 60 and 60 & above year age group respectively.

Conclusion and Recommendations
Uncorrected aphakia (20%) was the most common cause of low vision, followed by Refractive errors (15.14%) and Glaucoma (14.59%). Early detection of avoidable blindness such as from aphakia and refractive error can reduce low vision patients in future. Patient’s data entry and record keeping should be improved.

Frequency and outcomes of presumptive Pulmonary Tuberculosis patients with a single positive smear: a cohort study in Karonga district, Malawi
O. Koole, L. Munthali, B. Mhango, J. Mpunga, J. R. Glynn, A. C. Crampin,

Introduction
WHO recently issued new guidelines for HIV prevalent settings considering patients with at least one sputum smear-positive sample to be smear-positive pulmonary TB cases and lowering the threshold for defining a smear-positive case to one acid-fast bacillus per smear? In 2012, the Malawi National TB Programme adopted these approaches. We assessed the impact of the revised guidelines on measured burden and outcomes.

Methods
A retrospective cohort study was conducted of patients being investigated for pulmonary TB during the period 1998-2012. Project staffs are based at the district hospital and peripheral clinics and collect sputum from patients with chronic cough. Smears are processed in the project laboratory.
Results
In the 15-year period there were 10, 631 TB screening episodes. Single positive smears constituted 39% (514/1,325) of positive smear episodes and 5% (514/10, 631) of all screening episodes, 354 (3%) with a single non-scanty smear and 160 (2%) with a single scanty smear. Overall, 86/514 (17%) of patients with single positive smears died within one year compared with 14% among patients with more than one positive smear. Overall, 454 (88%) were started on TB treatment within 12 months. Of patients not started on TB treatment 37% (22/60) died.

Conclusions and recommendations
In this study, single positive smear screening episodes were not a rare occurrence. Reclassifying single smears will increase the number of smear positive patients by about 39%. Patients with single positive smears had higher mortality than other smear positive TB patients. According to revised guidelines, all 514 presumptive TB patients would have been tested for HIV and started on TB treatment without delay, probably resulting in lower mortality. Implementation of the revised guidelines is likely to have a substantial effect on TB notification rates, and reduce treatment delay and mortality among a group of patients who previously had a poor prognosis.

Responding to the need of continuity of patient care through nationally unique patient identifiers.


Introduction
By July 2013 more than 615,000 HIV-infected patients had been initiated on anti-retroviral therapy (ART) in Malawi. Under the supervision of Department of HIV & AIDS, ART clinics issue patient identifiers that are unique within the ART programme, and registered to a single clinic. While care was historically limited to dedicated ART clinics, increased emphasis on managing HIV-infected pregnant women, and exposed infants, as well as addressing TB/HIV coinfection, had necessitated that patients be identified not only within programmes, but across programmes. Furthermore, with the transition of patients from one facility to another, the ability to maintain a common identifier across clinics is valuable. Unfortunately, neither are achievable under the current approach.

Methods
With increased use of electronic medical record systems, the creation of a patient identification service and common electronic master patient index has paved the way to implementing nationally unique patient identifiers. Baobab Health Trust (BHT) developed an electronic patient registration system that generates facility-unique patient identifiers. In 2012 the system was enhanced to generate nationally-unique patient identification. BHT achieved this by extending the patient registration system to include a demographics data exchange (DDE) that centrally generates patient identifiers in line with guidelines set forth by the World Health Organisation. With this approach health facilities that are connected to the DDE synchronise their demographics details with a central server.

Results
The DDE is being piloted in 5 health facilities within Lilongwe.

Conclusions and Recommendations
The DDE presents an opportunity to respond to the need of patient identification for the management of patients enrolled in the ART programme since patients access multiple programmes within and across health facilities. The DDE should be used to answer some of the ART programme needs such as following up patients that have been lost to follow up. The DDE should also be extended beyond just sharing the demographic record to include additional clinical details; this will provide a richer collective past medical history across all programmes.

The prevalence and factors associated with injuries among football players in the super league of Malawi

J. Phillips, A. Mughogho

Introduction
Participation in sport has been seen as a double-edged sword: the profound health benefits gained versus the risk of injury and the associated morbidity and costs. Research has shown that football injuries are high in comparison to other sports injuries however there is paucity of studies regarding football injuries in Malawi. This study aimed to investigate the prevalence and factors associated with injuries in the football Super League of Malawi.

Methods
A cross sectional study using a self-administered questionnaire to determine the prevalence of injuries among football players in Malawi was used. Data was analysed using the SPSS version 20.0. Descriptive data was presented in the form of percentages, means, ranges, standard deviations, and frequencies using tables, figures, and graphs. A chi-square test of association and Fischer’s exact test were used to study the factors associated with football injuries against the prevalence of injury.

Results
A response rate of 67.5% was obtained. The mean age of football players was 21.73 (SD=3.295) years. The injury prevalence was 68.9% with 64% of injuries occurring during matches and 37% during training. The majority (84%) of the injuries were sustained in the lower limbs and 52.7% of the players who reported to have incurred an injury had recurring injuries with the ankle joint (33.3%) being the most affected part. Ligament sprain was the most common type of injury (36%) and most of the injuries (36.5%) reported were severe. No medical professional is available to manage injuries during training while team doctors are always available during matches. Recurrent injury was significantly associated with injury prevalence (P=0.001). Use of protective gear was also significantly associated with injury prevalence both at training (P<0.01) and matches (P<0.05).
Conclusions and Recommendations
This study highlighted the high prevalence of football injuries and their associated factors in the Super League of Malawi.

Early experience after developing a pathology laboratory in Malawi, with emphasis on cancer diagnoses

Introduction
Cancer burden is increasing in sub-Saharan Africa, and scarcity of pathology services is a major challenge. We describe our experience during the first 20 months of a new pathology laboratory in Lilongwe.

Methods
We performed a cross-sectional study of specimens from the Kamuzu Central Hospital pathology laboratory between July 1, 2011 and February 28, 2013. Patient and specimen characteristics, and final diagnoses are summarized. Diagnoses were categorized as malignant, premalignant, infectious, other pathology, normal or benign, or nondiagnostic. Patient characteristics associated with premalignancy and malignancy were assessed using logistic regression.

Results
Of 2772 specimens, 2758 (99%) with a recorded final diagnosis were included, drawn from 2639 unique patients. Mean age was 38 years and 63% were female. Of those with documented HIV status, 51% had unknown status, and 36% with known status were infected. Histologic specimens comprised 91% of cases, and cytologic specimens 9%. Malignant diagnoses were most common overall (n=861, 31%). Among cancers, cervical cancer was most common (n=117, 14%), followed by lymphoma (n=91, 11%), esophageal cancer (n=86, 10%), sarcoma excluding Kaposi sarcoma (n=75, 9%), and breast cancer (n=61, 7%). HIV status was known for 95% of malignancies, with HIV prevalence ranging from 9% for breast cancer to 81% for cervical cancer. Increasing age was consistently associated with malignancy [multivariable odds ratio 1.33 per decade increase (95% CI 1.14-1.56)].

Conclusions and Recommendations
A new pathology laboratory in Lilongwe has created a robust platform for cancer care and research. These data can complement population-based cancer registration efforts in Malawi. Continued success of the laboratory will depend on strong collaborations, sustained funding, and ongoing adaptation and refinement of procedures to the needs of the population. Our efforts can serve as a model for similar interventions throughout sub-Saharan Africa.

Assessment of knowledge on diet and lifestyle management among diabetic patients in northern Malawi
M. Chisale; M. Ngwira; J. Wu, M. Chipeta

Introduction
Diabetes has been described as an emerging non communicable epidemic. There is sharp increase in the prevalence in developing countries like Malawi. So far the mainstays of treatment of diabetes are diet, exercise and drug management with over 50% of the treatment being diet and lifestyle. The life expectancy of DM patients is likely to be prolonged if they can acquire knowledge of self manage in terms of diet and lifestyle. Therefore it was necessary to assess the level of knowledge about diet and lifestyle management among diabetic patients in Northern Malawi.

Methods
Cross-sectional study involving 200 patients attending three clinics in northern region; MZCH, KDH and NKDH. Patients were conveniently chosen on a voluntary basis. Diabetes knowledge was assessed using a questionnaire. Microsoft excels and Epi info 7 was used for analysis.

Results
157 of 200 patients (78.5%) had good diabetic knowledge. However the knowledge was incoherent and a lot of knowledge incongruities were observed. For example 34(85.0) of patients at KDH said that higher fatty foods helps reduce heart disease in DM patients which was statistically difference (p=0.033) from MZCH which was 81(67.5).

Conclusions and Recommendations
This shows that the current level of knowledge among the DM patients is not comprehensive enough to competently enable them to manage their condition since it lacks consistency and coherence. This might be due to lack of standard tailored tool for educating the DM patients. Therefore it should be emphasized that efforts are being needed to develop DM educational tool at national, regional and district levels so that knowledge can be logically expressed by all Diabetic.

Investigating the efficacy of praziquantel to Schistosomiasis: A study of lamusili village, a community around Lake Chilwa
J. Nyirongo, F. B. Nyirongo, D. Pemba

Introduction
Schistosomiasis has been proven to be a challenge in Malawi. It still remains endemic in the areas that are close to water bodies. Praziquantel has since, 2005 been used as the primary treatment against the disease. However, despite administering the drug to some patients, the symptoms as well as the presence of eggs have still being observed.

Methods
46 subjects were randomly selected in the study. Urine reagent strip (haematuria), ELISA antigen test and microscopy were used to diagnose the urine samples for bilharzia.

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Results
When the ELIZA rapid test was used, it was noted that the percentage of the people to whom the drug was administered yet still emerged positive was 90%. When microscopy was used, the percentage of those to whom the drug had been administered and yet still emerged positive was 45%.

Conclusions and Recommendations
The Eliza test is more accurate because it detects the antibodies. The results that were obtained show that there is a reduced efficacy in Praziquantel against Schistosoma haematobium. Praziquantel should be administered together with other antihelmint drugs such as Artemisinin, the active ingredient of the plant species Artemisia annua or consider synthesizing a new drug altogether.

Risk factors for hypertension and diabetes in rural and urban Malawi: A cross-sectional study of adults

Introduction
Non-communicable diseases, particularly diabetes and cardiovascular disorders, are now leading causes of morbidity and death in Sub-Saharan Africa (SSA). The classical modifiable risk factors for NCDs, such as smoking, obesity, high salt intake and physical inactivity, are likely to play a role in the pathogenesis of NCDs in Africa as in developed countries. However, reliable data on the burden of NCDs and the driving factors in Africa are lacking. This study aims to determine the burden of major NCDs and the distribution of risk factors in urban and rural populations in Malawi.

Methods
We aim to recruit 18,000 adults >18-years old in the Karonga demographic surveillance site (DSS) and 23,000 individuals in Area 25 Lilongwe in a cross sectional study. A questionnaire on socio-demographics and health seeking behaviours is administered; blood pressure and anthropometric measurements are measured followed by a fasting blood sample the next morning. Here, we present some preliminary data from this study.

Results
So far we have recruited 1719 participants in Lilongwe, median age was 30.4, IQR [23.6-39.3], 1087(63.2%) of these are female. Only 103(6%) of the participants reported ever smoking, while 253(14.7%) admitted to have taken alcohol in the past 12 months. 1211(70.4%) said they add extra salt to their plate (68.4%) or added 3 or more teaspoons of sugar to each cup of tea or coffee (81.6%) were similar to Lilongwe. In contrast, the prevalences of overweight (16.1%) and obesity (4.4%) were significantly lower in Karonga.

Conclusions and Recommendations
We expect our study to provide reliable data on the burden of NCDs and their associated risk factors that will be important to inform NCD control strategies. The variations in distribution of risk factors (such as obesity) between urban and rural areas, if confirmed, indicate that understanding of the local context will be crucial in designing effective intervention.

The importance of the traditional birth attendants in maternal and new-born health in rural Malawi
A. A. Assayed, J. Mkandawire, V. Lwesha, N. Phiri Bsc Demo. MPH, E. Kamanga, A. Muula

Introduction
The government of Malawi with its partners introduced formal training for TBAs considering their role in Maternal and Child health. In spite of the formal training, the trends for maternal mortality ratio still remain high. Following this, Malawi banned TBAs in 2007. Recently, there has been confusion after the State ordered TBAs to resume work while the Ministry of Health maintained the ban but instead introduced a programme for specially trained nurse assistants. The objective was to evaluate the value of TBAs in maternal and new born health.

Methods
A mixed method cross sectional study using focus group discussions, key informant interviews and a structured questionnaire. The study was conducted in Zomba district where the Ministry of health was also implementing the specially trained nurses program.

Results
Distance was the main determinant of the value of TBAs by communities. Respondents living close to the health centre felt that TBAs were not important while communities that were 5 kilometres or more from a health facility thought otherwise. Communities pointed out areas where TBAs were dangerous, areas like poor identification of complications, lack of knowledge on Prevention of Mother to Child Transmission of HIV etc. On the new programme for nurses, communities weren't sure about the difference between TBAs and Nurse Assistants.

Conclusions and Recommendations
TBAs still hold an important role in communities with poor access to health facilities. Culture, traditions and other social or economic factors are important in enhancing the effectiveness of the especially-trained nurse assistant programme. This study urges policy makers to consider culture, traditions, social and economic factors when planning for maternal and neonatal health programs. Ministry of health needs to communicate the developments to the communities clearly. The especially trained Nurse Assistants should be equipped with reasonable resources for instance, drugs and equipment as well as referring facilities.
What role does traditional medicine play on women's reproductive health in Malawi? A case study of rural northern Malawi.

A.P. Sefasi,

Introduction
The study aimed at establishing the benefits and dangers of using Traditional Medicines among women in their reproductive health.

Methods
The study was done in Ncheleni and Ensekweni. We employed both qualitative and quantitative methods of research. We used Interviewer-administered questionnaire and Focus group discussion to collect data from a sample of 50 participants. Our sample was made up of herbalists, Traditional Birth Attendants, women of childbearing age and medical professionals.

Results
The findings indicate that traditional medicines are used for various purposes which include; enhancing fertility in a newly married woman, making a woman more 'hot' for sexual enjoyment of her partner, as a cure for Sexually Transmitted Infections, sustain and protect pregnancy following conception, induce labour during delivery and for purposes of abortions. However, it was also established that Traditional Medicines are also associated with increased incidences of Cancer of the cervix among its users, increased exposure to Sexually Transmitted Infections, premature labour, rupture of the uterus during labour and still-births.

Conclusions and Recommendations
This study established that while some traditional medicines can be beneficial lack of appropriate use brings a lot of health challenges in women's reproductive health. The lack of appropriate use is manifested in the poor diagnosis, lack of appropriate dosage, unhygienic practices and also lack of appropriate training for the traditional Medicine providers. Lack of appropriate health services in rural areas pushes women to use more Traditional Medicines which poses enormous challenges in their reproductive health. We therefore recommend improved health services for rural areas and incorporations of traditional medicine providers in health training and messages.

Community-based participatory nutrition education, gender roles and child care in northern Malawi
E. Chilanga, R. Bezner Kerr and I. Luginaah

Introduction
Under-five child malnutrition for both HIV and non-HIV/AIDS infected children is a public health challenge in Malawi. Programs such as promotion of optimal early feeding, control of Vitamin A deficiency and anemia have been initiated to address child malnutrition. Although some progress has been made, close to 47 percent of children are still malnourished. In Malawi, the majority of child care and feeding is done by women who have high workloads and little control over household economic resources.

Scholars are striving to find strategies that can motivate and empower fathers to be involved in housework and childcare activities, which can mitigate the underlying causes of child malnutrition. The paper draws on feminist and gender theories, transformational educational approaches and the concept of care to assess whether participatory community-based nutritional education can promote a more equal household gender division of labour and sharing of childcare practices amongst HIV infected household in northern Malawi.

Methods
The findings draw upon qualitative research conducted in an agrarian community. In-depth interviews, focus group discussions and participant observation data were collected from 30 couples and 16 informants before and after a participatory nutrition education program over a 4 months period in 2012.

Results
The results show that there are highly unequal gender roles in childcare and household work, which are justified with various socio-cultural explanations but participatory nutrition educational approach shows potential for involving husbands in some childcare and household domestic work.

Conclusions and Recommendations
Child nutritional status can be enhanced in a patriarchal society if community leaders, elders, fathers and wives understand the negative impact of household gender inequality on the wellbeing of children and that fathers acquire childcare skills.

Determinant factors affecting levels of knowledge on pre-mature births among women of Malawi.
A. Matope, E. Mwikilama

Introduction
In spite of significant efforts in caring for Premature or pre-term born (PTB) babies in the country, Malawi continues to face the problem with an estimated highest rate of 18.1% compared to Mozambique (16.4%), Zimbabwe (16.6%) and Zambia (12.9%) due to limited knowledge of understanding PTB's causes and prevention. The objective was to determine factors affecting levels of knowledge among women found at Bwaila Hospital (BH) by examining their major sources of information and perceptions of PTB. A cross-sectional study of 100 haphazard sampled women found at BH capturing both qualitative and quantitative data.

Methods
Data on socio-demographic, modes of access to information about causes, prevention and perceptions of PTB were obtained through questionnaires and interviews. Both descriptive and inferential statistical analyses were done in SPSS.

Results
Logistic regression and chi-square analysis results revealed that area of residence (p-value=0.039), age (p-value=0.010) and education level (p-value=0.012) influence the levels of knowledge on PTB. Older women (OR=5.43, CI=1.81-17.62) showed better understanding and knowledge on PTB than younger ones (OR=4.74, CI=1.28-16.29), just as women with higher levels of education (OR=10.27, CI=1.71-61.75).
Conclusions and Recommendations


Introduction

Under-five child mortality is decreasing but with little change in neonatal mortality rates. One of the factors associated with improvements in mortality is increasing availability of antiretroviral therapy (ART) for expectant mothers. We examined the effect of maternal HIV status on under-five mortality and cause of death since widespread availability of ART in rural Malawi.

Methods

Children born between September 2006 and December 2011 in the Karonga Demographic Surveillance System were included. Maternal HIV status was derived from linked HIV serosurveys. Age-specific mortality rate ratios of children born to HIV+ and HIV-mothers were obtained by fitting a Poisson random effects model taking into account child clustering by mother and adjusting for potential confounders.

Results

There were 317 deaths among 7,054 under-five singleton children followed for 14,118 person-years (py), giving a mortality rate of 22.5/1000py (95% CI 20.1-25.1). Neonatal mortality rate was 241/1000py, similar in those born to HIV+ and HIV-mothers, rate ratio (RR) 1.0 (95%CI 0.4-2.5), adjusted for child age, sex and socioeconomic confounders. Mortality rate was 22/1000py in post-neonatal infants, adjusted RR 6.9 (95% CI 4.3-11.2) in those born to HIV+ compared to HIV-mothers. In children aged 1-4 years, mortality rate was 11/1000py, adjusted RR 3.7 (95% CI 1.9-7.2) in those born to HIV+ compared to HIV-mothers. Birth injury/asphyxia, neonatal sepsis and prematurity contributed >70% of neonatal deaths while acute infections, malaria, diarrhoea and pneumonia accounted for most deaths in older children.

Conclusions and Recommendations

Maternal HIV status did not increase neonatal mortality but was associated with much higher mortality in the post-neonatal period and among older children. Greater uptake and retention on ART by pregnant women is needed to help improve child survival but broader interventions are needed to reduce neonatal mortality.

Exploring experiences with home-based peer support to promote exclusive breastfeeding in the context of HIV in Mchinji, Malawi

A. Bula

Introduction

Exclusive breastfeeding (EBF) for 6 months is ranked as the most cost-effective way of feeding infants especially in Sub-Saharan Africa where women are poor and infant mortality is high. Unfortunately, mixed feeding is common practice, increasing risks of infant death due to malnutrition, HIV, diarrhea and other infectious diseases. Community-based Interventions by MaiMwana project has proved to be effective in promoting EBF in poor settings. However, there was little attention on the needs of HIV positive women during the design and conduct of the intervention. The aim of this study was to explore the importance and experiences with implementing the intervention in Mchinji, Malawi in the context of HIV.

Methods

I purposively selected and conducted qualitative in-depth interviews with 39 key informants in Mchinji, Malawi between January to August 2012 using a pre-designed interview guide. Responses were analyzed using Framework analysis. The study received approval from City University London and the Malawi National Health Sciences research ethics committees.

Results

HIV positive and negative women were supportive of the intervention for continuity of infant feeding counselling as volunteers spend more time with them. HIV positive women appreciated the visit because they had time to tell their story to someone. However, some did not disclose their status due to fear of stigma and abandonment by family members present during the visit, making it difficult for counsellors to effectively provide counselling on EBF. Additionally, service users find the intervention not being cost-effective due to lack of time and money to travel to the hospital to access care, treatment and other services.

Conclusions and Recommendations

It is important for projects to consider the needs of HIV positive women when designing community-based interventions to reduce HIV transmission and deaths among infants. Integration of services is desired considering the levels of poverty and distance to health facilities.

Assessment of quality of maternal health services at primary health care centres in Ntcheu district

G. Mzembe, D. Mategula, I. Mhango, V. Mwapasa

Introduction

Since 2000 Maternal Mortality Ratio has declined in Malawi but remained high at 675/100,000 livebirths in 2010. Simultaneously, the proportion skilled deliveries increased from 56 to 76% between 2004 and 2010. This increase could negatively impact the quality of the services due increased demand for limited infrastructure, human and material resources. We assessed the extent to which maternal services at primary health facilities adhered to Basic emergency
Obstetric Care (BEmOC) standards and community perceptions towards the services.

Methods

We conducted a qualitative study at two purposively selected primary health facilities in Ntcheu district and one catchment population. We conducted structured observations to assess infrastructural capacity of the facilities. Also, we conducted Focus Group Discussions (FGDs) with twenty community members residing in the catchment area of the selected health facilities, including women who had delivered at the health centre within the preceding two years and key decision makers on maternal health issues. Qualitative data were analyzed thematically using grounded theory.

Results

We found poor infrastructural capacity in the health facilities in terms of inadequate space, intermittent electricity supply, unreliable tele/radio-communication and limited access to transportation for further referral of cases. The daily number of deliveries and catchment population were high relative to the available maternity beds. There were critical shortages and utilization of skilled health personnel leading to performance of some deliveries by unskilled personnel and suboptimal delivery of BEmOC services. Despite having reservations with quality of service delivery, the majority of the community members were content with the birth outcomes.

Conclusions and recommendations

The two health facilities failed to meet the BEmOC standards. We recommend the improvement of clinical infrastructure, means of communication and skills of health personnel to improve the quality of obstetric services.

Improving access to maternal and child health information and services in rural Malawi through mobile health interventions: Results from a mixed method evaluation

M O'Toole, A Higgins-Steele, Z Jezman, E Bancroft, JC Fotso

Introduction

Chipatala Cha Pa Foni (CCPF) – “health centre by phone” – is a mobile health pilot of VillageReach, Concern Worldwide, and the Ministry of Health, which seeks to address information and service access barriers to improve maternal, newborn and child health (MNCH). It consists of a toll-free hotline offering protocol-based health information, advice and referrals and automated and personalized mobile-phone based tips and reminders for pregnant women, carers of young children and women of child-bearing age.

Methods

To determine effects of this intervention on MNCH knowledge and home and facility-based behaviour practices we used a quasi-experimental, pre-test and post-test evaluation design. The cross-sectional population-based survey included 6,692 women and 6,877 carers of children under-five. Qualitative methods included focus group discussions, key informant interviews, and hearsay ethnography among users, non-users, and key stakeholders.

Results

The quantitative analyses showed a positive effect on knowledge of recommended antenatal care visits and that pregnant women should do less heavy lifting. For service users, the data show an increase in use of both home and facility-based practices for maternal health, and use of home-based practices for child health. Qualitative results found that women benefited substantially from the service because they were able to access accurate MNCH information in a convenient and respectful manner.

Conclusions and Recommendations

CCPF demonstrates that mobile technology can successfully extend MNCH information to effect positive changes in health behaviours and outcomes. Roll out of CCPF has the potential to relieve patient burden at health facilities, particularly if service uptake were improved.

Improvement and retention of emergency obstetrics and neonatal care knowledge and skills in a mentoring program at a maternity hospital in Lilongwe, Malawi

J Tang; C Kaliti; A Bengtson; S Hayat; E Chimala; R MacLeod; S Kaliti; F Sisya3; M Mwale; J Wilkinson

Introduction

Improved training in Emergency Obstetrics and Neonatal Care (EmONC) may decrease maternal and neonatal mortality. Our primary objective was to assess whether a hospital-based mentoring program could significantly increase EmONC knowledge and practical skills at Bwaila Maternity Hospital. Our secondary objective was to evaluate if our mentors and mentees retained their knowledge and practical skills 6 months after completing their initial training.

Methods

We created a two-phase mentoring and training program. During the first phase, we trained 20 providers as mentors. During the second phase, each mentor trained 4-10 additional providers. One Pre-Test and 2 Post-Tests were used to assess written and practical EmONC knowledge and skills. The Pre-Test was given before initiating the program. Post-Test 1 was administered immediately after completing the program, and Post-Test 2 was given 6 months later. The written test consisted of 80 questions focusing on 8 topics. The practical test consisted of hands-on case studies with obstetric models on 5 topics. The Wilcoxon signed rank sum test was used to compare mean pre-test and post-test scores.

Results

From April to June 2012, we trained 20 mentors in our program. These mentors then trained an additional 114 mentees from July to September 2012. Comparison of the 134 Pre-Test and Post-Test 1 scores revealed a significant increase in score (p<0.001) for the written and practical tests for both mentors and mentees. Similarly, comparison of the 114 Pre-Test and Post-Test 2 scores revealed that there was still a significant increase in score (p<0.05) for scores for each topic and the overall written and practical tests.

Conclusions and Recommendations
A hospital-based mentoring program can result in both short-term and longer-term improvement in EmONC knowledge and practical skills. Further research is needed to assess if this improvement leads to behavioral changes that improve actual maternal and neonatal outcomes.

Care for children from 0-2 in rural and urban settings in Malawi: Perspectives from carers and health care professionals.

M. Gladstone, K. Maleta, R. Thindwa, A. Rahman, J. Phuka

**Introduction**

Significant reductions in child mortality have occurred worldwide. Despite this, over 200 million children <5 yrs do not reach their developmental potential. Effective interventions include cognitive stimulation and nutrition provided synergistically. The feasibility of such interventions in rural African settings has not been tested. We aimed to understand attitudes, beliefs and barriers which carers and health care workers in Malawi have with feeding and stimulation of children less than 2 in rural and urban Malawi.

**Methods**

We conducted 18 focus group discussions (FGDs), 20 in-depth interviews (IDIs) and 12 participatory group sessions with mothers, fathers and grandparents from rural and urban settings using purposive sampling methods. We also conducted 20 IDIs and 2 FGDs with health care workers. Topic guides were adapted in line with grounded theory. Data was subject to thematic content analysis using a framework approach.

**Results**

Themes emerging include; play as an “output” rather than “input”; lack of knowledge regarding some feeding practices, early communication and basic hearing/vision of infants. Mothers critical to target (including health and well being) but carers encompass siblings and grandparents and specific issues regarding ownership and care for orphans/ step children. Barriers within the community include gender, lack of resources, time pressures and responsibilities. Health care workers have no training and many roles to play. Social welfare staff may be better trained but unable to work at individual level.

**Conclusions and Recommendations**

To promote effective interventions, a programme of care must consider these barriers to create approaches which will enable more sustainable model of care to improve development and nutrition of children under 2.

Contraceptive discontinuation in rural Karonga

A. Dasgupta, B. Zaba, A. Crampin

**Introduction**

Although 42% of married women in Malawi report using modern-methods of contraception, fertility remains high at 5.7 births per woman. It is important to examine contraceptive switching and discontinuation because as desired family size declines and contraceptive prevalence increases, effectiveness and duration of use become increasingly significant determinants of fertility.

**Methods**

The Karonga Prevention Study operates a demographic surveillance site (DSS). We used an innovative method to collect family planning (FP) data using patient-held records capturing provider data to build a prospective longitudinal dataset, which allows exploration of continuity of use and switching, and is linked to the DSS-database. All women age 15-49 living in the DSS were offered a FP-card to be attached to her health-passport. The cards allowed health providers to record details of all FP services they provided. After one year, the FP-cards were collected by KPS for analysis.

**Results**

The period-prevalence of FP-use over the year was 61%, although this figure does not reflect the fact that many of these women use FP haphazardly and inconsistently. This is particularly so for women using short-term methods, who are more prone to discontinuation given these methods require repeat visits. Switching between non-barrier methods was rare, with just 6% of FP-users using more than one method. Survival analysis revealed that for women using injectables at the start of the study, only 28% were still using injectables consistently by the end of the year, demonstrating high discontinuation rates.

**Conclusions and Recommendations**

Adherence to short-term methods including injectables is poor. This calls for reliable services to provide FP consistently, improved counseling to encourage women not to miss appointments, and counseling for potential side-effects to facilitate method-switching where necessary and minimize discontinuation.

An exploratory study of how Malawian carers and health professionals perceive community-based management of acute malnutrition approach in infants aged under 6 months

C. Brugaletta; M. Chigwiya, T. Chipasula; E. Moyo; L. Newberry; M. Kerac

**Introduction**

Of 20 million children aged <5 years with SAM (Severe Acute Malnutrition) worldwide, 3.8 million are infants <6 months. Whilst community-based treatments for older children have been around for over a decade, all current national guidelines describe only inpatient care for infants. Forthcoming WHO guidelines on SÂM will also recommend community-based options. This study aimed to explore carer and healthcare worker perspectives on these new proposals.

**Methods**

A qualitative study based on 12 interviews and 20 focus groups in Southern Malawi. Data were analyzed using Excel and a thematic analysis conceptual framework.

**Results**

Infant malnutrition was a sensitive topic raising emotional responses involving family relationships and taboos. Six themes emerging from the data were: understanding of causes and symptoms of infant SAM; perception of
management of infant SAM in hospitals; Perception of management of infant SAM in the community; caregiving resources (mother and household); caregiving resources (community level); perceived priorities for management of infant SAM. Participants instinctively preferred inpatient-based treatments for infant SAM. However, this was based on superficial risk-benefit judgments and high expectations from inpatient-care in terms of staff and treatment (food/medicine) availability. Participants also valued community-based care options including support from local healthcare workers, family and community members. They preferred individually-tailored rather than group treatments.

Conclusions and Recommendations

Stakeholder involvement is vital to any new policy: we hope that our findings will therefore help inform and shape future policy on infant SAM. For new services to develop successfully and reach as many affected individuals and populations as possible, close engagement with families and communities is essential. Infant SAM treatment services must not only support the mother-infant dyad but consider wider family and social contexts underlying infant SAM. Community-based care providers should work closely with hospital teams to ensure synergy and avoid being perceived as a 2nd-best service.

Evaluating aspects of peer support that increase exclusive breastfeeding (EBF) rates in breastfeeding mothers-a systematic review

T. E. Munkhondya

Introduction

EBF is the most cost-effective and feasible public health measure of reducing mother to child transmission of HIV and child mobility and mortality. However, the prevalence of EBF across the globe is far from optimal. Studies have shown that the use of peer support is effective in promoting breastfeeding rates. This review aimed at identifying the specific aspects in peer support that are effective in promoting EBF.

Methods

The systematic review of RCT and quasi-experimental studies was utilised. An online literature search was conducted in Medline, CINAHL, BNI, Embase, the Cochrane library and the Joana Briggs (JBI) library for literature reviews. The following key terms were used and expanded during the search strategy; breastfeeding, peer supporters, EBF. The identified studies were critically appraised using the JBI critical appraisal checklist for experimental studies to ascertain studies to be included or excluded in the review. Data extraction was done using the JBI extraction forms for experimental studies. A narrative synthesis was used for synthesising the results.

Results

Proper selection of peers, offering them proper training, conducting frequent and repeated contacts with mothers in their homes with predetermined information to assist the breastfeeding mothers with and financial support to peers had statistically significant effects on EBF promotion.

Conclusions and recommendations

Use of trained peer supporters seems to be a reliable and sustainable approach in promoting EBF. It is recommended that breastfeeding mothers, especially those with HIV, should be continuously supported by local peer supporters to increase rates of breastfeeding.

Incorporating development of non-communicable diseases treatment protocols with development of an electronic medical record

P. Khomani, F. Chirwa, L. Kamvazina, Munthali, Ngoma, Chawawula, Kanyengambeta, R. Manjomo, O. Gadabu, B. Mwagomba

Introduction

Recent years have seen a rise in the number of patients presenting with Non Communicable Diseases (NCDs) at Health Facilities in Malawi. This has been confirmed by the Malawi World Health Organisation (WHO) steps survey. The rise may be partially attributed to lifestyle changes in the country. The Malawi Ministry of Health (MoH) has since established an NCDs programme in order to address this challenge. Patients with NCDs have customarily been treated with clinical practice guidelines (CPGs) specific to clinics that they attend. There have also been challenges in measuring programme's performance due to lack of systematic documentation of the NCD cases. This has the potential of affecting patient outcomes.

Methods

Baobab Health Trust (BHT), a Malawian Non Governmental Organisation (NGO) has implemented an information system for managing patients attending Diabetes Mellitus (DM) clinics. This approach addresses documentation of patients enrolled in these clinics. MoH in liaison with BHT adapted the WHO PEN CPGs for managing NCDs to extend the scope of the DM information system to encompass other NCDs such as Hypertension and Asthma. The NCDs integrated CPGs have thus been embedded into an Electronic Medical Record (EMR) system in order to encourage adherence to CPGs by health care providers.

Results

Standardized integrated NCDs CPGs protocols have been developed. These CPGs have been embedded into an EMRs for integrated management of NCDs.

Conclusions and Recommendations

Standardized integrated CPGs for NCDs present a unified way of treating patients with NCDs. The Chronic Care Clinic (CCC) information system has embedded protocols and will encourage adherence to CPGs as well as document NCD cases and hence easily measure the burden of NCDs in the country. EMRs with embedded CPGs should be extended to NCD health facilities to standardize treatment of patients and reinforce adherence to CPGs.

The quality of care of diabetic patients in rural
Malawi: a case of Mangochi district

A. Assayed., A. Muula., M. Nyirenda

Introduction

Diabetes mellitus is becoming a global public health problem. In Malawi, the prevalence of diabetes is 5.6%, but the quality of care has not been well studied. The aim of this study was to assess the quality of care provided to diabetic patients in Mangochi district.

Methods

This was a cross sectional descriptive study. Qualitative data were collected using questionnaire from a sample of 75 diabetic patients (children and adults) who attended the diabetes clinic at Mangochi District Hospital between 20012 and 2013. Qualitative data were also collected using semi-structured interviews with eight Key Informants from among the District Health Management Team. Frequencies and cross-tabulation were obtained from the qualitative data. Clinical knowledge about diabetes, care practices and resources were the themes analysed from the qualitative data.

Results

Among the 75 participants interviewed, 46 were females and 29 males. The overall mean age was 48.3 years (45.6 for females and 53.3 for males). More than half of patients had little or no information about diabetes (40.0% (n=30) and 22.7 (n=17) respectively. Almost all patients (98%) were taking their medicines regularly. Only 17.3% (n=13) who inspected their feet regularly. 56% of patients were satisfied about services provision. Two out of six nurses and five out of six clinicians who were trained on diabetes care remained. Although the hospital had guidelines on diabetes management, these were not readily accessible. However, patients received IEC messages regularly. Shortages of some important medicines and laboratory reagents were common.

Conclusions and Recommendations

Quality of diabetes care in Mangochi district of Malawi was sub-optimal due to lack of knowledge and resources. From these findings, we would suggest to the Ministry of Health and partners to invest more in the Non-Communicable Diseases in general and diabetes in particular, with focus on training and other inputs.
determined. Associations between mtDNA subhaplogroups and clinical characteristics, including peripheral neuropathy and lipodystrophy were analyzed with multivariable logistic regression.

Results
Nine mtDNA subhaplogroups were observed. The Malawian ethnic groups shared similarities in subhaplogroup distribution with other groups from southern and south-eastern Africa. Subhaplogroup L0a2 (OR 2.23; P= 0.019) was associated with increased risk of peripheral neuropathy, while subhaplogroups L2a was associated with reduced risk (OR 0.39; P= 0.036). Subhaplogroup L3e was not observed among patients with lipodystrophy.

Conclusions and Recommendations
Our data suggest that mtDNA subhaplogroups are associated with differential risk of stavudine-associated mitochondrial toxicity. While the ideal of individualized drug therapy on the basis pharmaco-genetic screening may not be applicable in Malawi in the near future, further understanding of the genetic background of responses to medications could improve the choice of standardized regimens in different populations.

Prevalence of HIV testing in inpatient psychiatric care at Zomba Mental Hospital
S H Gleadow Ware, M Matoga

Introduction
Internationally, people living with a mental disorder (PLWMD) are paradoxically less likely to receive testing and counseling and more likely to have poorer prognosis and higher rates of mortality. HIV infection may present primarily with a mental disorder, at time of sero-conversion, or be associated with disease progression. PLWMD often have poorer rates of engagement with general healthcare services, and as such, inpatient hospital admission to a psychiatric facility presents an opportunity to receive HIV testing and counselling.

Methods
This was a cross-sectional baseline survey to establish rates of HIV testing and counselling in inpatients at Zomba Mental Hospital from January 2012-July 13. Routine data was collected from the HIV testing and Counselling (ART) Clinic at Zomba Mental Hospital.

Results
In total, 614 patients underwent HIV testing and counselling. 50.16% (n=308) were female, of which 5 were recorded as pregnant. Of those tested, overall 16.9% were HIV reactive. Of those women tested, 25.6% (n=76) were reported as pregnant. Of those tested, overall 16.9% were HIV reactive.

Conclusions and Recommendations
Whilst there are limitations to the completeness of this data, our initial results indicate that rates of HIV are significant amongst female inpatients, compared to the national average, particularly amongst women. National guidelines recommend that all inpatient admissions receive updated HIV testing. Our results indicate this is an area that requires prioritisation, to ensure that the needs of this vulnerable group of the population are being met within existing HIV/AIDS programmes and in collaboration with mental healthcare services.

Strategies to improve art delivery and clinical outcomes of stable art patients: lessons learned from the implementation of community art groups in Thyolo district, Malawi.
Antony Billaud, Rebecca Coulborn, Bote Zamadenga, Miguel Cuenca, Daniela Garone, Rodd Gerstenhaber, Laura Trivino Duran, Andrew Likaka, Kinsley Mbewa, Richard Chidakwani

Introduction
Thyolo District is located in the southern region of Malawi, which has a higher than national HIV prevalence rate (14.5%). The district suffers from a severe shortage of health staff. Community-based models of care may decongest overburdened health care systems and improve access to and retention-in-care of HIV-infected patients.

Methods
In 2012, a steering committee comprising key representatives from health sectors working in Thyolo district was formed to direct implementation of an innovative initiative known as Community ART Groups (CAGs). Stable patients on ART formed into groups of six at community level. CAG members rotated monthly health facility visits for collection of ART for the group and clinical follow-up.

Results
One year after implementation, findings include:

- Within 2 months, 50 CAGs with 299 patients on ART were established
- After 9 months in CAGs, 90% (95% Confidence interval (CI): 86.0-93.1) of patients were alive and remaining in CAG care; 1.7% (CI: 0.5-3.9) transferred out; 1.3% (CI: 0.4-3.4) died; 0.3% (CI: 0.0-1.8) defaulted; and 6.7% (CI: 4.1-10.1) returned to conventional care
- Group ARV refills reduced ART-related visits by half, reducing patient burden and staff workload
- Health seeking behavior related to non-HIV care remains constant before and after members are enrolled into CAG care

Conclusions and Recommendations
The CAG model is highly acceptable to patients in Thyolo and preliminary outcomes are positive. However, ongoing supervision of the programme at community and health facility level is crucial. Close partnership with existing social support networks facilitates the CAG model and improvement of the ART supply chain is needed.

Preliminary findings of a routine PMTCT OPTION B+ program in a rural district in Malawi
Rebecca M. Coulborn, Laura Trivino Duran, Carol Metcalf, Yvonne Namala-Murindiwa, Zengani Chirwa, Michael Muowa, Kingsley Mbewa and Daniela Garone

Introduction

In July 2011, the Malawi government adopted PMTCT Option B+ as a national policy. All HIV-infected pregnant and breastfeeding women are offered lifelong antiretroviral therapy (ART), regardless of CD4 count and WHO clinical stage. However, information on programmatic outcomes of PMTCT Option B+ in resource-limited settings is limited.

Methods

An electronic database, containing clinical and laboratory records of mothers and infants, was used to monitor and evaluate the PMTCT program at six health facilities in Thyolo District in southern Malawi.

Results

From April 2012 to January 2013, 733 women and 111 infants entered the program. At enrollment, 98.1% of the women had WHO clinical stage 1 or 2 disease. Of 248 women with information on ART eligibility, 45.6% met the WHO clinical stage and/or CD4 criteria for ART initiation, irrespective of pregnancy status. Women who delivered after enrollment (n=61) started ART a median of 12 weeks prior to delivery (range 1 to 20 weeks). Of 579 women with at least three months follow-up, 9.5% (95% confidence interval [CI]: 7.2 – 12.2%) did not return after ART initiation. Of 393 women with at least five months follow-up, 20.4% (95% CI: 16.5 – 24.7%) were lost to follow-up within three months of ART initiation. Of 54 infants whose mothers started ART prior to delivery, six (11.1%) had a birth-weight less than 2.5 kg. Of 47 infants followed-up for more than three months from birth, 31.9% (95% CI: 19.1 – 47.1%) were tested for HIV and results were negative.

Conclusions and Recommendations

We found high rates of loss to follow-up among women, particularly after the first clinical visit, and poor compliance with national guidelines advocating infant PCR testing. These preliminary findings have important implications for the success of the PMTCT program. Failure to address the programmatic challenges identified is likely to result in limited program effectiveness.

Home assessment and initiation of art following HIV Self-testing: A cluster randomised trial to improve uptake of art in Blantyre, Malawi

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Introduction

HIV self-testing (HIVST) may contribute to early diagnosis of HIV, but linkage into care following HIVST is unknown. We hypothesized that optional home initiation of HIV care may increase linkage.

Methods

Adult (16 years) residents in 14 community health worker (CHW) catchment areas in urban Blantyre (total adult population 16660; adult HIV prevalence 18.85%) were offered HIVST through trained resident volunteers. Clusters were randomized to i) facility-based care only (FCO) or ii) optional home initiation of HIV care (OHC) following HIVST (including two weeks of ART if eligible) with referral into routine services. The primary outcome was the proportion of all adults (regardless of HIV status) initiating ART through any route within six months of HIVST availability. Secondary outcomes were uptake of HIVST and reporting of positive HIVST results. This trial is registered: NCT01414413.

Results

A significantly greater proportion of adults in the OHC arm initiated ART (181/8194, 2.2%) compared to the FCO arm (63/8466, 0.7%; risk ratio [RR]: 2.94, 95% CI: 2.10-4.12). ART uptake (127/17796 [0.7%]) in 14 comparison (no self-testing) clusters was similar to that in the FCO arm. Uptake of HIVST was high in both the OHC arm (5287/8194, 64.9%) and the FCO arm (4433/8466, 52.7%; RR: 1.23, 95% CI: 0.96-1.58), but significantly more adults reported positive HIVST results in the OHC arm (490 [6.0%] vs. 278 [3.3%]; RR: 1.86, 95% CI: 1.62-9.7).

Conclusions and Recommendations

Optional home assessment and initiation of HIV care during an HIVST intervention tripled population-level uptake of ART and substantially increased willingness to report positive HIVST results. HIVST alone did not appreciably increase ART initiations, despite high uptake. If implemented widely, HIVST with effective linkage to care could contribute to achieving universal coverage of ART.

Renal insufficiency among women treated with TENOFOVIR/EMTRICITABINE/LOPINAVIR/RTONAVIR (TDF/FTC/LPV/R) OR TDF/FTC/NEVIRAPINE (NVP): Analysis from the actg 5208 trial.

Mwafongo Albert, Nkanauna Konndwani, Hosseinipour Mina, Lockman Shanin, Currier Judith, Hughes Michael

Introduction

TDF has been associated with renal insufficiency, and co-administration of TDF with boosted protease inhibitors may further increase this risk.

Methods

We compared the incidence of renal insufficiency among women participating in ACTG A5208, a clinical trial among women in Africa who were randomized to initiate antiretroviral treatment (ART) with either TDF/FTC/LPV/r or TDF/FTC/NVP. All participants had pre-ART estimated creatinine clearance (CrCl) >60ml/min using the Crockcroft-Gault formula. A renal insufficiency event was defined as occurrence of any grade 3 or 4 serum creatinine, or of CrCl that led to treatment modification per protocol definition. For both outcomes, using univariate and multivariate analysis we evaluated potential predictors including randomized regimen, prior single dose nevirapine exposure, and baseline age, hemoglobin (Hgb), CD4 cell count, body mass index.
Results

Of 741 HIV-infected women enrolled in the study, 24 (3%) had a renal event (18 [4.9%] of 371 women randomized to LPV/r, and 6 [1.6%] of 370 women randomized to NVP). Nine had grade 3 or 4 creatinine elevations and 16 had low CrCl resulting in treatment modification. Sixteen subjects discontinued TDF (10 [2.7%] in LPV/r arm, 6 [1.6%] in NVP arm). In multivariate analysis, randomization to the LPV/r arm was associated with renal insufficiency events (OR = 3.12, 95% CI [1.21, 8.05], p = 0.019), as were higher baseline HIV-1 RNA (OR = 2.65, 95% CI [1.23, 5.69], p = 0.013) and lower baseline CrCl (OR = 0.83, 95% CI [0.70, 0.98], p = 0.003) but not CD4 count, Hgb or BMI. However, when including only renal events resulting in treatment modification, only higher baseline HIV-1 RNA (OR = 4.41, 95% CI [1.65, 11.78], p = 0.003) and lower baseline CrCl (OR = 0.80, 95% CI [0.64, 0.99], p = 0.040) remained significantly associated.

Conclusions and Recommendations

The overall rate of new renal events in the AS208 study was low. Women randomized to TDF/FTC/LPV/r had significantly more renal events compared to women randomized to TDF/FTC/NVP. Furthermore, only baseline HIV-1 RNA and CrCl were associated with the development of renal insufficiency requiring treatment modification. We recommend that treatment with Tenofovir combined with a protease inhibitor needs more monitoring for renal insufficiency compared to a combination with a NNRTI.

Exploring women and health care workers experiences in the context of pmtct option b plus in Malawi

Fabian Cataldo, Levison Chiwaula, Misheck Nkhata, Monique van Lettow, Florence Kasende, Nora Rosenberg, Hannock Tweya, Veena Sampathkumar5, Mina Hosseinipour, Erik Schouten, Atupele Kapito-Tembo, Sam Phiri, Michael A and the PURE Consortium Malawi

Introduction

Since mid-2011, the MOH has embarked on ‘Option B+’, a PMTCT programme offering lifelong antiretroviral treatment (ART) to all HIV-infected pregnant and breastfeeding women regardless of CD4-count or clinical stage. One of the threats to the implementation of this programme is the suboptimal uptake of ART and retention in care.

Methods

We conducted a cross-sectional qualitative study to explore perspectives surrounding the roll-out of ‘Option B+’ and patients/health care workers (HCWs) perspectives on integrated PMTCT/ART care. Semi-structured, in-depth interviews and focus group discussions were conducted with HCWs (n=48) and pregnant or breastfeeding women currently enrolled in ‘Option B+’ (n=24). Study participants were purposively selected across six health facilities in the Central-West, South-East, South-West regions. Data were analysed using a thematic coding framework.

Results

Confidentiality and privacy remain major concerns in the context of accessing PMTCT services. Study participants expressed concerns at the lack of male involvement and the rapidity of the process for same day test and treat, which makes it difficult for patients to ‘digest’ a positive diagnosis before starting ART. Some of the reasons contributing to loss to follow up include lack of support from family, fear for breach of confidentiality, feeling discouraged at the prospect of lifelong ART, and lack of partner involvement. Disclosure remains limited and a difficult process. Several patients expressed fear of rejection from their partner. Being
enrolled in lifelong ART was also perceived as an opportunity to plan future pregnancies.

Conclusions and Recommendations
As ‘Option B+’ continues to be rolled-out, new interventions to support women to be retained into care must be implemented. These include interventions that focus on providing time and support for patients to accept a positive HIV diagnosis before starting ART treatment, engaging partners and families into PMTCT care, and addressing the need for peer-support and confidentiality.

Efficiency of hiv-1 pooled viral load testing to reduce the cost of monitoring antiretroviral treatment in a resource-limited setting in rural Malawi
Pieter Pannus, Emmanuel Fajardo, Carol Metcalf, Laura Triviño Duran, Daniela Garone, Rebecca M. Coulborn*, Anthoney Tebulo, Helen Bygrave, Tom Ellman, Michael Muora, Reuben Mwenda

Introduction
HIV-1 viral load testing is more sensitive than clinical or immunological monitoring at detecting antiretroviral therapy (ART) failure, but is unaffordable in many resource-limited settings. Specimen pooling can be used to reduce testing costs. We conducted a study to evaluate the feasibility, accuracy, efficiency, and cost-saving of testing viral load on pooled dried blood spot (DBS) samples compared to individual plasma samples in a rural district laboratory in Thyolo, Malawi.

Methods
350 patients 18 years, on first-line ART for 6 months participated in the study. HIV-1 viral load was measured in plasma and finger-prick DBS samples using the NucliSENS EasyQ v2.0 assay. Viral load was measured in minipools of 5 samples. A deconvolution algorithm required testing of all samples in the minipool if the pooled viral load exceeded 200 copies per millilitre (cps/ml) at a 1000 cps/ml threshold, or 1000 copies/ml at a 5000 cps/ml threshold.

Results
Of the plasma samples tested, 8.0% had a viral load 1000 cps/ml and 6.6% a viral load 5000 cps/ml. Compared to individual plasma testing, minipooling fingerprick DBS samples reduced the number of tests required by 28.6% (95% CI: 23.9 – 33.6%) at a viral load threshold of 1000 cps/ml, and 51.4% (95% CI: 46.1 – 56.8%) at a viral load threshold of 5000 cps/ml, resulting in a potential cost saving of $161,000 to $290,000 per year. Applying the minipooling algorithm to DBS samples yielded accurate results, with a negative predictive value (NPV) of 98.2% (95% CI: 96.1 – 99.3%) using a 1000 cps/ml cutpoint, and 97.9% (95% CI: 95.7 – 99.2%) using a 5000 cps/ml cutpoint.

Conclusions
Pooling of DBS specimens is feasible in a rural laboratory setting. Measuring viral load on pooled DBS specimens could increase accessibility and substantially reduce cost while maintaining accuracy, enabling viral load testing to be scaled-up in resource-limited settings.

Prevalence of depression amongst hiv infected adolescents in Malawi

Introduction
Depression is the most commonly occurring psychiatric disorder among people living with HIV and AIDS (PLWHA). Children and adolescents are particularly vulnerable to depression with reported prevalence estimates as high as
28%. Most depression studies in youth come from high-income countries, with a scarcity of data regarding depression coming from the epicenter of the HIV pandemic—Southern Africa. The objective of the study was to determine the prevalence of depression among HIV-infected adolescents aged 12-18 years in Malawi.

Methods

A cross-sectional design with a descriptive quantitative approach was used. HIV-infected adolescents presenting for routine care at antiretroviral treatment (ART) clinics at Baylor and Zomba (Central and Southern Malawi, respectively) were invited to participate in the study. Two depression screening instruments were used; Beck’s Depression Inventory-II (BDI-II) and Children’s Depression Inventory-II-Short (CDI-II-S). A clinical interview using the Children’s Depression Rating Scale-Revised (CDRS-R) was used to confirm the diagnosis of depression. Chi-Square tests were used to compare the categories of depression between males and females.

Results

Out of the targeted 700 participants, 80% (562) completed the questionnaires. Of these, 93.1% (523) were on ART. Their mean age was 14.5 years. Using the BDI-II (cut-off 17), 25.6% (144) were determined to be depressed, with 15.1% (85) rated to have moderate to severe depression. Suicidal symptoms were expressed in 7.1% (40) of the participants with 1.1% (6) expressing severe suicidal symptoms. The CDI-II-S showed that 20.8% (117) were depressed. Finally, using the CDRS-R, the clinical assessment, 18.9% (106) were determined to be depressed. There was no difference between prevalence of depression amongst males and females by all three measures.

Conclusions and Recommendations

This study demonstrates a high prevalence of depression amongst HIV-infected adolescents in Malawi. Additional research investigating factors associated with depression are needed in order to inform the development of effective interventions.

The impact of nutrition on people living with HIV and AIDS nutrition and diet society

Masauko Thawe

Introduction

Nutrition and diet society is committed to ensuring that the Malawian society is practicing good nutrition and hygiene behaviours. Realising the deaths that occur due to HIV and AIDS pandemic, our Organisation decided to find out how people handle their nutrition practices as a way of promoting good health. The research was conducted in Chikuli, Chileka, and Blantyre rural. Over 780 people were involved in the research. NUDISO through this project conducted a mini research that was aimed at:

1. Establishing improved levels of diet for people living with HIV and AIDS
2. How PLWHIV get care and support from family members and communities at large

Methods

The research applied community mobilisation as a tool of establishing collective and qualitative views from PLWHIV and the community at family level. One-on-one interviews with PLWHIV, Focus Group Discussions with communities.

Results

It was realised that although people have access to Antiretroviral Therapy (ART), fast and sudden deaths occur due to lack of proper nutrition management. This is compounded by poverty levels that block access to nutritious foods that boost the immune system. Additionally, rural inhabitants tend to shun locally available foods, including vegetables which play a vital role in boosting the immune system. Furthermore, despite efforts by Government and NGOs to provide nutritious foods to PLWHIV for consumption, people tend to sell the products and utilise the money for their preferred type of foods, which turn out to be un-nutritious.

Conclusions and Recommendations

The Nutrition Policy was regulated. However, it requires popularisation to ensure that communities are able to prioritise good nutrition practices that will eventually reduce death rates due to HIV and AIDS. Awareness should also be intensified to PLWHIV on nutrition management so that they are able to balance diet. This will compliment to the reduction of HIV and AIDS prevalence rate.

Roll out of Universal ANTIRETROVIRAL therapy for HIV infected pregnant and breastfeeding women (“OPTION B+”) in Malawi: Factors influencing retention in care

Lyson Tenthani & Andreas D Haas, Hannah Tweya, Andreas Jahn , Joep J van Oosterhout, Frank Chimbwandira, Zengani Chirwa, Wingston Ng’ambi, Alan Bakali, Sam Phiri, Landon Myer8, Fabio Valeri, Marcel Zwahlen, Gilles Wandeler, Olivia Keiser

Introduction

Malawi introduced the “Option B+” strategy to prevent mother-to-child transmission of HIV, starting all pregnant and breastfeeding women on lifelong antiretroviral therapy (ART) in 2011.

Methods

In this cohort study we analysed country-wide facility- and patient-level data from sites enrolled in the national electronic ART register. We explored site- and patient-level factors of loss to follow-up (LTF) by meta-analyses, logistic regression and competing risk survival models.

Results

A total of 21,939 women from 540 sites (in facility-level data) and 28,428 women from 19 ART sites with electronic medical record system (EMRS) (in patient-level data) were included. Seventeen percent of all Option B+ patients were LTF six months after ART initiation. LTF varied considerably across sites from 0 to 58%. Thirty-seven percent of the sites performed well with less than 10% of all patients LTF six months after ART initiation. Thirty-three percent of the patients had LTF >20%. LTF was higher in urban sites, in larger sites with EMRS, in sites operated by the Ministry of Health, and in central hospitals. In larger sites with EMRS, Option B+ patients who started ART while pregnant were five times...
more likely to fail to return to the clinics after the initial visit than patients who started ART for their own health (OR 5.2, 95% CI 4.4–6.2). Option B+ patients who started treatment while breastfeeding, were twice as likely to miss their first follow-up visit (OR 2.3, 95% CI 1.8–2.8). Pregnant Option B+ patients who started ART on the same day they tested HIV+ were less likely to return to clinics than pregnant Option B+ patients who started later (OR 1.7, 95% CI 1.4–2.2).

Conclusions
Retention was good at many sites but LTF varied widely. Further investigation should increase our understanding of Option B+ patient LTF early on ART.

The relevance of interpersonal communication in Voluntary Medical Male Circumcision (VMMC) demand creation at Bwaila VMMC centre, Lilongwe district


Introduction
WHO/UNAIDS recommends that high HIV prevalence countries include male circumcision in their HIV prevention portfolios. Demand creation is central to uptake of VMMC services. Use of conventional mass communication strategies has been endorsed by funding agencies and implementers. Yet, little has been done to maximize interpersonal communication (IP) to increase VMMC uptake. At Bwaila Clinic, we examined I-TECH and Lilongwe DHO collaborative efforts in demand creation from September 2012 to July 2013 specifically comparing conventional demand creation strategies and IP using community mobilizers (CMs).

Methods
In June 2013, 25 satisfied VMMC clients were recruited as CMs to enhance demand creation. They participated in a two-day orientation focusing on IP and community mobilizing skills. CMs were equipped with IEC materials, provided with minimal cash for transport and incentivized to incremental rewards based on client numbers referred to the clinic. CMs through community peers networking, conducted a one-on-one talk with prospective clients referred them to the clinic after issuing a referral-slip. Data for each client was entered in an access database indicating source of information. Monthly client information source was generated and reported as part of the routine reports. CMs who referred <10 clients in month were considered failures and had their contracts terminated.

Results
By referral slips count CMs tripled VMMC uptake from (n=578) in June to (n=1939) in July 2013. The leading source of recommendations for clients in July was reported as CMs (28%), with other sources noted as relatives (23%), radio (19%) and friends (18%). Relaties as a primary referral source have almost tripled from 8% in June to 23% in July, most likely as a result of increased CMs involvement.

Conclusions and Recommendations
IP strategies which maximize personal experience, peer influence and social networks yield higher demand for VMMC compared to conventional mass communication strategies in traditionally non-circumcising communities.

Increasing uptake of HTC in Malawi through routine testing in VMMC settings: Characterization of clients age and HIV status attending VMMC at Bwaila clinic


Introduction
In response to WHO/UNAIDS call for VMMC scale-up, Malawi has integrated VMMC as part of the national comprehensive HIV prevention intervention. The overwhelming evidence of the effectiveness of VMMC in reducing the risk of acquiring HIV in men is compelling. One way to achieve maximum impact in averting new HIV infections is by conducting VMMC mass campaign targeted on men of sexual reproductive age. This paper characterizes age and HIV status distribution of clients attending VMMC clinics compared to those captured in the national 2013 HTC data base.

Methods
Routine program monitoring data from the National HTC 2013 first quarterly report were extracted, reviewed, and compared with the demographic characteristics of clients attending VMMC services at Bwaila Clinic. The client’s age characteristics and HIV status were also compared with national HTC data from the quarterly report.

Results
In VMMC program at Bwaila clients age and HIV status attending VMMC at Bwaila clinic. The client’s age characteristics and HIV status attending VMMC compared to conventional demand creation strategies and IP using community mobilizers (CMs).

Conclusions and Recommendations
VMMC programs receive a large proportion of their clients from within a young male population underserved by HTC. Expansion of VMMC services may facilitate increased HTC uptake for the general male population in high HIV prevalence settings.
Assessment of the accuracy of dried blood spot (DBS) sample in HIV-1 viral load as compared to plasma sample using abbot assay

Introduction

By the end of 2012, >10 million HIV infected people were on antiretroviral treatment (ART) including >400,000 Malawians. Chronic complications of HIV infection and treatment are increasingly recognised, notably cardiovascular disease. Prior to ART scale up African HIV infected patients had high prevalence of dilated cardiomyopathy and pericardial disease.

Methods

A cross-sectional study aiming to recruit 600 participants into 3 age-frequency and gender matched patient groups (A, B, C = HIV-negative, newly initiating ART, and long-term (>5 yrs)) ART patients from QECH, Blantyre, Malawi. A standardised questionnaire is administered, followed by physical examination, haemoglobin, CD4 count, lipid-profile, inflammatory markers, sub-maximal 6 minute walk test with oximetry and heart rate recovery, resting ECG and transthoracic echocardiogram (ECHO) by a trained physician blinded to the study arms.

Results

Of the first 200 patients recruited, mean age was 43y (range 25 to 66), with 38.5% male. Hypertension (resting >140 systolic or 90 mmHg diastolic) was common in all 3 groups (A, B, C = 41, 33, 46 %), but most prevalent in the ART >5y. Left ventricular hypertrophy, a cardiac echo indicator of structural heart disease consistent with hypertensive cardiomyopathy was noted in 08, 13, 28%, respectively of Groups ABC. Surprisingly, high evidence of rheumatic valvular disease was noted in 53 (26%) participants, but there was no significant difference in the study groups. Ischaemic heart disease and dilated cardiomyopathy were uncommon, but 33% of new-ART participants had pericardial effusions, but no evidence of cardiac tamponade was noted. We used the NYHA classification to assess participants subjectively for cardiac performance scale. The mean score was 38.8 (range 30-40, maximum 40) and there was no significant difference in the three study arms.

Conclusions and Recommendations

Hypertension with end-organ cardiomyopathy is highly prevalent, and was significantly more common in long-term ART patients than other groups in this study. Pericardial effusions in participants starting ART remain common, especially in patients with low CD4 counts. Valvular heart disease, suggestive of rheumatic heart disease, may concurrently be causing substantial morbidity and mortality in this patient population.
and 31st December 2012. We used longitudinal binary logistic regression of adherence level1 on pregnant versus lactating women at ART initiation, age at ART initiation, and months on ART using Stata version 12 where population average method and exchangeable correlation matrix were implemented at 5% significance level.

**Results**

1,757 women started ART through Option B+; 79% pregnant and 21% breastfeeding at ART initiation. Median age was 26 years and IQR:22-30 years. Median adherence level was 91% with IQR: 18%-100%. Breastfeeding women were 16 more likely to adhere to ART than pregnant women at ART initiation. Women that have been on ART for less than three months were more adherent than those on ART for at least three months (OR: 0.88, 95%CI: 0.71-0.85). Women aged 27+ years were less likely to be adherent than younger women (OR: 0.77; 95%CI:0.710.85)

**Conclusions and Recommendations**

There was a concerning trend towards reducing adherence with time on ART, and an apparently counterintuitive finding of better adherence in younger women. Increased post-test counselling, psychosocial and ongoing adherence support among HIV positive pregnant and breastfeeding women is needed to maximize ART adherence and outcomes for both mothers and infants.

**Equity in health access and outcomes in PMTCT care in the context of option B Plus in Malawi**

Levison Chiwaula, Fabian Cataldo, Gowokani Chirwa, Monique van Lettow, Nora Rosenberg, Hannock Tweya4, Veena Sampathkumar, Mina Hosseinipour, Erik Schouten, Atupele Kapito-Tembo, Micheal Eliya, Sam Phiri and the PURE Consortium Malawi

**Introduction**

Since the mid-2011, the country has embarked on a test-and-treat approach to prevent mother to child transmission of HIV (PMTCT) known as ‘Option B+'. Despite the national goals of reaching out all women in need of care, access to these services may depend on an individual’s socioeconomic status. We assess the socioeconomic differences in health access and outcomes of PMTCT care in Malawi in the context of Option B+.

**Methods**

We conducted a survey in six purposively selected health facilities in the Central-West, South-East and South-West health zones where 93 women were interviewed. An asset index was used measure household socioeconomic status. Health outcomes were measured by measuring the health related quality of life by using the EQ5D questionnaire.

**Results**

About 90% of the poorer women walked to seek PMTCT care compared to 70% of richer women. Travel time per visit to a health facility was 145 minutes for poorer women and 102 minutes for richer women. Richer women spent MK178 on transport per visit compared to MK21 for poorer women. Poorer women spent MK36 on food while richer women spent MK13. Slightly more women from poorer group (53%) reported no problem in the five domains of the EQ5D than women from the richer group (50%). The average VAS score for poorer households was 0.83 and that for richer households was 0.84. The two groups had similar health status.

**Conclusions and Recommendations**

Socioeconomic disparities in access to PMTCT services for different socioeconomic groups exist. Women from poor households spend more time to access PMTCT care while women from rich households spend more time to attain similar health outcomes. Policy efforts should make access to PMTCT care more equitable by taking care closer to the patients’ homes.

**Disclosure of HIV status to HIV-positive children and young adolescents attending a rural health centre in Malawi**

Esther Mgoli, Rebecca M. Coulborn, Carol Metcalf, Saar Baert, Laura Trivino Duran, Takondwa Kachola, Dickson Kamwendo, Lington Bwanaisa

**Introduction**

Among caretakers of HIV-positive children, disclosure of HIV status can be daunting due to fear of negative reactions, lack of awareness on the importance of disclosure, and lack of information on how to disclose. Because of evidence of a health benefit from disclosure (e.g., reduced mortality risk), WHO recommends disclosure of their HIV status to HIV-positive children of school-going age.

**Methods**

At Thekerani Health Centre in southern Malawi, children on ART (aged 7 to 14 years) and their caretakers were offered 3 group sessions of HIV disclosure counselling at one-month intervals. Sessions for children included a gradual explanation of the virus’s action in the body, with HIV named in the last session. Caretakers received counselling on the importance of disclosure and how to communicate with children about HIV. We conducted a retrospective record review of 42 children eligible for disclosure counselling and in care in March 2012.

**Results**

Eighteen children (42.9%) completed all 3 sessions. Sixteen children (38.1%) did not complete any disclosure counselling sessions; 8 (19.0%) completed only 1 or 2 sessions. Children aged 7 to 9 years were more likely to complete all 3 sessions (7/9, 77.8%), than those aged 10 to 14 years (11/15, 73.3%). Of the 16 children who missed all counselling appointments, reasons given included illness (n=7, 43.8%); distance from the health centre (n=5, 31.3%), domestic chores (n=2, 12.5%) and a lack of parental support (n=2, 12.5%). 11 children (26.2%) required referral to social welfare services.

**Conclusions and Recommendations**

Offering disclosure counselling to HIV-positive children and their caretakers is a useful means of making children aware of their HIV-status. Individual counselling for children that missed group counselling appointments could address barriers for completing the counselling package. Disclosure counselling should be included in paediatric ART programmes and health workers should be trained in child
Preliminary findings of a routine PMTCT option B+ program in a rural district in Malawi

Rebecca M. Coulborn, Laura Trivino Duran, Carol Metcalf, Yvonne Namala-Murindiwa, Zengani Chirwa, Michael Murowa, Kingsley Mbewa and Daniela Garone

Introduction
In July 2011, the Malawi government adopted PMTCT Option B+ as a national policy. All HIV-infected pregnant and breastfeeding women are offered lifelong antiretroviral therapy (ART), regardless of CD4 count and WHO clinical stage. However, information on programmatic outcomes of PMTCT Option B+ in resource-limited settings is limited.

Methods
An electronic database, containing clinical and laboratory records of mothers and infants, was used to monitor and evaluate the PMTCT program at six health facilities in Thyolo District in southern Malawi.

Results
From April 2012 to January 2013, 733 women and 111 infants entered the program. At enrollment, 98.1% of the women had WHO clinical stage 1 or 2 disease. Of 248 women with information on ART eligibility, 45.6% met the WHO clinical stage and/or CD4 criteria for ART initiation, irrespective of pregnancy status. Women who delivered after enrollment (n=61) started ART a median of 12 weeks prior to delivery (range 1 to 20 weeks). Of 579 women with at least three months follow-up, 9.5% (95% confidence interval [CI]: 7.2 – 12.2%) did not return after ART initiation. Of 393 women with at least five months follow-up, 20.4% (95% CI: 16.5 – 24.7%) were lost to follow-up within three months of ART initiation. Of 54 infants whose mothers started ART prior to delivery, six (11.1%) had a birth-weight less than 2.5 kg. Of 47 infants followed-up for more than three months from birth, 31.9% (95% CI: 19.1 – 47.1%) were tested for HIV and results were negative.

Conclusions and Recommendations
We found high rates of loss to follow-up among women, particularly after the first clinical visit, and poor compliance with national guidelines advocating infant PCR testing. These preliminary findings have important implications for the success of the PMTCT program. Failure to address the programmatic challenges identified is likely to result in limited program effectiveness.

Leveraging community-based HIV activities to screen at-risk populations for hypertension in rural Malawi


Introduction
Non-communicable diseases (NCDs) are an increasing cause of morbidity in sub-Saharan Africa, and an estimated one-third of Malawian adults have hypertension. As strategies are developed to improve diagnosis and treatment of NCDs, it will be important to integrate approaches into existing platforms. Neno District’s well-developed HIV program is an ideal platform for improving hypertension case-finding, due to the reach achieved by the program through community-based activities.

Methods
As part of routine NCD care, blood pressure screening was integrated into community-based HIV activities in Neno. All adults who attended HIV events were offered screening, which was accompanied by group education regarding risks for hypertension and treatment by a clinician and the community support team. Anyone whose blood pressure exceeded 145/90 was referred to the Neno NCD Clinic. We audited routinely collected referral data to ascertain the number of patients identified at community-based events following introduction of integrated screening.

Results
During a two-month period, a total of 453 patients were screened at community-based events (avg. age 40 years; 72% female), of whom 58 (12.8%) were referred for hypertension. These referrals equate to 35% of the active hypertensive patients already enrolled at the clinic, which has been in service since mid-2012. Females constituted 71% of those referred (average age 46). Eleven patients, 22% of referrals, had Stage III hypertension (systolic blood pressure > 180 or diastolic > 110).

Conclusions and Recommendations
Leveraging community-based HIV activities is an effective way to reach adults at risk of hypertension and can rapidly and significantly increase case finding in a rural area. Innovative ways to integrate screening for common NCDs into existing programs are an important part of the NCD agenda. Utilizing community-based activities is one approach that should be further investigated. Exploring methods to specifically target older and male populations would be beneficial.
**Introduction**

Access to HTC services is the critical first step in linking HIV-positive clients to treatment, care and support. Nevertheless, ensuring that all adults are tested yearly in accordance with Malawian guidelines remains a challenge, due to overburdened staff, the stigma of HIV/AIDS, and other barriers to access. Partners in Health (PIH)/Abwenzi Pa Za Umoyo (APZU), an NGO, is working in partnership with the Ministry of Health (MOH) to overcome these challenges.

**Methods**

Dedicated HTC counselors were introduced in Neno to undertake facility-based HTC, and community-based screening was employed to improve access. We audited routine HMIS monitoring data to ascertain uptake of HTC services in Neno and the rest of Malawi, and qualitatively identified key factors contributing to Neno’s success.

**Results**

From July 2012-June 2013, 28% (20,369 adults) of Neno’s 15+ population was tested for HIV, versus 21% (634,239) of adults in the 13 other districts of Malawi for which data was available. We associate Neno’s superior HIV testing rates with two factors. PIH/APZU provides Neno health facilities with dedicated HTC counselors, which improves its counselor/client ratio and ensures staffing is sufficient to meet testing demand. It also frees up PITCs (nurses/clinicians/HSAs), who otherwise would be tasked with HTC, to provide other services. Secondly, Neno makes extensive use of community-based outreach programs to target adults who might not otherwise access HTC at health facilities due to geographical or economic barriers. From July 2012-June 2013, 3,585 people (18% of the total tested in Neno) were tested during outreach activities.

**Conclusions and Recommendations**

A multifaceted approach using dedicated HTC counselors to meet demand and community-based outreach to overcome barriers to access can increase HTC uptake in rural areas. The cost-effectiveness of dedicated HTC counselors for increasing facility-based testing should be evaluated. Identifying community-based opportunities for testing should be a priority for HTC programs.

**Morbidity and mortality in HIV exposed under-five children in a rural Malawi setting, a cohort study.**

Oscar Divala, Charles Michel and Bagrey Ngwira

**Introduction**

Paediatric HIV infection significantly contributes to child morbidity and mortality in southern Africa. In Malawi as in most countries in the region, care of HIV exposed children is constrained by the lack of area specific information on their risk to dying and morbidity. This research estimates and compares morbidity and mortality events between HIV exposed and unexposed under-five children in a rural Malawian setting.

**Methods**

Data for children under the age of five collected from January 2009 to June 2011 at a demographic and health site in Karonga district of northern Malawi were analysed. Morbidity and mortality rates among HIV exposed and unexposed children were calculated and compared using Kaplan–Meier survival analysis and Cox proportional hazard regression.

**Results**

Overall (n=7,929) cohort data of under-five children born in a demographic and health site represented 12380.8 person years of observation (PYO) of which 3.1% were contributed by HIV exposed infants. Females accounted for half of the sample, and the overall mean age was 18.4 months (SD 13.4) with older children in the HIV unexposed group. All-cause morbidity rate was 337.6/1000 PYO (95%CI:327.5/1000-348.0/1000) and HIV-exposed children morbidity rate was 1.34 times higher (p <0.001) compared to HIV-unexposed children. IMCI pneumonia was the most common diagnosis (39.3%) in this cohort. Child mortality rate was 16.6/1000PYO (95% CI 14.5-19.1) from 206 deaths. HIV exposed children had 4.5 times higher (p<0.001) mortality rate compared to the HIV unexposed children. Higher mortality rates were observed in children under-one year (129.2/1000PYO) compared to older age groups.

**Conclusions and Recommendations**

HIV exposure at birth has a greater impact on child morbidity and mortality especially in the first year of life. This underscores the need for targeted and synergetic interventions that included focussed PMTCT which could reduce HIV transmission to children in their infancy in this setting.

**Provider knowledge and attitudes about safer conception options for people living with HIV**

P Kawale, D Mindry, A Phoya, P Jansen, R Hoffman

**Introduction**

There is limited understanding of health care providers’ knowledge and attitudes towards HIV-infected individuals’ fertility intentions and reproductive choices, particularly in resource-limited settings.

**Methods**

Providers at two hospitals in central Malawi were interviewed in focus group discussions about their perception of patients’ fertility desires and needs, as well as barriers and facilitators to the provision of effective reproductive health service provision at their clinic, with specific attention to knowledge and views on safer conception methods for people living with HIV. Focus groups were recorded, coded into Atlas.ti and analysed using grounded theory to identify core themes and subthemes.

**Results**

Providers are supportive of childbearing among their clients...
living with HIV, particularly young couples and people that have not had children yet. However, they also raised concerns about risk to the mother’s and infant's health, and the social welfare of the child, some revealing an undertone of judgment, and others expressing the view that they do not think people with HIV should have children or at least are not fully supportive of them doing so. Providers support and encourage partner disclosure and counseling. Providers have very limited knowledge of reproductive health, PMTCT, and safer conception, and are not well positioned to provide safer conception counseling due to this lack of knowledge.

Discussions and Recommendations
Providers have mixed attitudes about HIV-infected clients having children. Providers recognize the importance of partner involvement in safer conception and reproductive health counseling. However, providers lack knowledge to appropriately counsel clients about safely conceiving and having children. There is need to develop policy, guidelines and training for healthcare providers to enable them better serve men and women with HIV intending to have children. Training for providers should focus on safer conception options and address concerns about health and social risks to the mother and child.

The dilemma of discordant HIV test results in HIV infected/exposed infants
M. Bvumbwe, S. Mathuwa, P. N. Kazembe

Introduction
Baylor-Malawi enrolls an average of 37 HIV exposed infants every month. Exposed infant-mother pairs are followed-up closely in HIV Care Clinics. Despite close monitoring, some infants become infected due to poor maternal adherence to ART or late initiation of maternal ART. Infection in these infants is determined by a positive DNA-PCR test and the child is then started on ART. HIV status is then confirmed with routine HIV rapid test at 12 and 24 months for all exposed infants in order to capture false positives resulting from contamination or mix-up of samples used in DNA-PCR testing.

In most cases, a child with a positive DNA PCR will have a reactive HIV rapid test at 12 and 24 months. In some cases, a child may have a negative HIV rapid test at 12 or 24 months of age whilst they had a positive DNA-PCR result earlier in life. These discordant results cause confusion for many pediatric providers and require a tiebreaker to determine if ART should be continued. Tracking and follow-up of discordant results is performed with repeat DNA-PCR as a tiebreaker. Surprisingly, a repeat DNA-PCR turns out negative in some, and positive in others. In these cases another tiebreaker is needed apart from repeating DNA-PCR.

Methods
At Baylor-Malawi, 12 infants were identified in 2012, who had an initial positive DNA-PCR early in life, were started on ART and found to have negative rapid tests at 12 or 24 months. The infants received repeat DNA PCR tests. Three had NEGATIVE repeat DNA-PCR results and nine had POSITIVE repeat DNA-PCR.

Results
Some exposed infants with a positive DNA-PCR test early in life have a negative confirmatory rapid test, and a negative tiebreaker DNA-PCR. These infants need a second tiebreaker to determine final HIV status.

Conclusions and Recommendations
Repeating DNA PCR can confirm HIV status in some infants with discordant test results. However, in children with persistently discordant results, additional methods of testing (such as ELISA and Western blot) are needed to determine definitive HIV status apart from repeating yet another DNA-PCR.

Health care providers, men and pregnant women's perceptions on factors influencing male involvement in PMTCT services in Blantyre, Malawi
L.A. Nyondo, A.S. Muula and A. Chimwaza

Introduction
Male Involvement in PMTCT is considered crucial in a family setting where men are the decision makers as is the case in most African countries. Male partners have a role in the woman’s risk of acquiring HIV and also in the uptake of HIV testing and MTCT prevention programmes. Involvement of partners in HIV testing is necessary for uptake of PMTCT interventions (35). To date, rates of MI remain low in Africa. The purpose of this study was to identify factors that promote and hinder MI in PMTCT services in antenatal care services in Blantyre Malawi.

Methods
A cross sectional qualitative study was conducted from December 2012 to January 2013 at South Lunzu Health Centre (SLHC) in Blantyre, Malawi. It consisted of six face to face Key Informant Interviews (KIIs) with health care workers and four Focus Group discussions (FGDs) with 18 men and 17 pregnant women attending antenatal care at SLHC. The FGDs were divided according to sex and age. All FGDs and KIIs were digitally recorded and simultaneously transcribed and translated verbatim into English. Data were analysed using thematic content analysis.

Results
The hindrances to male participation were lack of knowledge, socioeconomic factors, relationship issues, timidity, unplanned and or extramarital pregnancies, fear of knowing one’s HIV status, unwillingness, and health facility based factors, peer influence and cultural factors. The factors that may promote male involvement were categorized into community, health facility and personal or family level factors.

Conclusions and Recommendations
There are several factors that may hinder or promote MI. The success of MI lies on interventions that will minimize the barriers whilst enhancing the factors that promote MI. Health care workers should identify the factors within an individual that may promote or hinder MI in PMTCT and use that information to encourage MI.

The feasibility of automating audit and feedback for ART guideline adherence in Malawi
Zach Landis-Lewis, Mello-Thoms C, Oliver Gadabu, Douglas GP, Rebecca S Crowley

Introduction

Health care workers (HCWs) performance in low-resource settings is frequently below the standards of care recommended in clinical practice guidelines (CPGs), leading to millions of unnecessary deaths each year. Training interventions to improve HCW performance are based on CPGs that standardize the delivery of health care. Once training is complete, HCWs in low-resource settings have limited opportunities to improve their knowledge through continuous learning by, for example, receiving feedback that reinforces new guideline-based knowledge. A major barrier to the provision of feedback in these settings is human resource shortages.

Methods

We evaluated recommendations from Malawi’s ART guidelines using Guideline Implementability Appraisal criteria. Recommendations that passed selected criteria were converted into ratio-based performance measures. We queried representative EMR data to determine the feasibility of generating feedback for each performance measure, summed clinical encounters representing each performance measure’s denominator, and then measured the distribution of encounter frequency for individual HCWs across nurse and clinical officer groups.

Results

We analyzed 423,831 encounters in the EMR data and generated automated feedback for 21 recommendations (12%) from Malawi’s ART guidelines. We identified 11 nurse recommendations and eight clinical officer recommendations. Individual nurses and clinical officers had an average of 45 and 59 encounters per month, per recommendation, respectively. Another 37 recommendations (21%) would support audit and feedback if additional routine EMR data are captured and temporal constraints are modeled. It appears feasible to implement automated guideline adherence feedback that could potentially improve HCW performance and supervision. Feedback reports may support workplace learning by increasing HCWs’ opportunities to reflect on their performance.

Conclusions and Recommendations

A moderate number of recommendations from Malawi’s ART guidelines can be used to generate automated guideline adherence feedback using existing EMR data. Further study is needed to determine the receptivity of HCWs to peer comparison feedback and barriers to implementation of automated audit and feedback in low-resource settings.

Determinants of retention of women into PMTCT option B+ strategy: A retrospective study at Bwaila hospital

Pempho E. Manda Tsirizani M. Kaombe

Introduction

Malawi uses prevention of mother to child transmission (PMTCT) option B+ strategy as a major route to provide highly active antiretroviral therapy (HAART). Even though a high percentage of pregnant women get initiated into HAART, their retention rate decreases later in the months of the programme. Therefore, the aim of this study was to firstly estimate the length of time a woman recruited in option B+ care was expected to report back for treatment and secondly identify factors that determine the retention of the women into care.

Methods

A retrospective cohort design engaging survival analysis statistical models was used in order to analyse time in months from when a patient entered into option B+ care at Bwaila hospital to the next time they received the drug. Percentages, histograms and the Kaplan-Meier survival curves were used to statistically describe the data. The Cox proportional hazard statistical model was used in assessing the factors associated with retention into option B+.

Results

The results showed that 72.1% of participants returned within the study period and 27.9% were censored and the reasons for censoring were defaulting, stopping medication or dying. It was also revealed that the hazards of being retained were the same for every difference of one year in a woman’s age. Similarly, the hazards were equal for every difference of 1 kg/m² in a woman’s body mass index. Increase in months of ART, reduced the hazards of retention in option B+ for women. Further, women having no side effects had 2% (95% CI: 3-9; p< 0.005) higher hazard of being retained than those who did experience any side effects. In addition, women who were lactating had 21% (95%CI: 4-41; p> 0.005) higher hazard of being retained than those who were still pregnant. Thus, the predictors of retention were found to be age, body mass index, duration on ART and side effects.

Conclusions and Recommendations

It is therefore recommended that these factors be taken into consideration by planners during the monitoring and evaluation process of the option B+ project in order for the project to meet the intended results.

Determinants of using voluntary counselling and testing for HIV/AIDS in Malawi

Murendere Chaponda, Gowokani Chijere Chirwa, Patrick Kambewa

Introduction

VCT is the process by which an individual undergoes confidential counseling to cope with stress and make informed choices about learning his or her HIV status. It aims to reduce risk taking behaviour by providing individuals with information about their own HIV status. Many people though having HIV and AIDS do not know their status. In 2011 it was estimated that about 440,000 to 510,000 people in Malawi are living with HIV/AIDS but not receiving treatment (WHO/UNAIDS, 2011). Therefore this study investigates the socio-demographic factors that determine
one’s need to demand VCT services such that wider coverage is achieved.

**Methods**
The study employs a logistic regression model due to the categorical nature of the dependent variable and analysis is done through observation of the marginal effects.

**Results**
The results show that VCT uptake among Malawi women is determined by age, residence, education, marital status, employment, mode of employment and lifetime number of sexual partners. With men, the variables age, education, region of residence, lifetime number of sexual partners, marital status, wealth status and employment are found to be significant in influencing VCT uptake. However marital status and employment respectively have variables middle class wealth group and had work in the previous twelve months which are insignificant.

**Conclusions and Recommendations**
The study indicates that a targeted approach than a universal one is required in VCT setup management. VCT set up management to target less-educated, poor, seasonal and occasional employees, those in rural areas, never married marital status group and to encourage VCT take-up by those who have more than one life sexual partner.

**In search of a face: reproductive decisions of couples living with HIV from rural southern Malawi**

B.T. Chimphamba Gombachika, E. Chirwa, A. Malata, A. Maluwa, J. Sundby, H. Fjeld

**Introduction**
The paper analyzes the reproductive decisions among couples living with HIV in two rural districts in southern Malawi using qualitative methods. It seeks to fill two key knowledge gaps: reproductive decisions made by the couple together, and the importance of socio-cultural factors in these decisions. To elicit knowledge about the dynamics that unfold within and between couples living with HIV and their social networks when decisions about having children are taken, in 2010, 20 in-depth interviews with couples living with HIV were conducted in two antiretroviral clinics in an area with patrilineal (Chikhwawa) and matrilineal (Chiradzulu) kinship organization.

**Methods**
It sought information on marriage, childbearing and production of documents with guidelines on sexual and reproductive health and HIV and AIDS in Malawi.

**Results**
The study shows that couples living with HIV in both communities want to be in a marriage, and that they establish new marriage after divorce or death of spouse. These new marriages produce at least one new child, regardless of the number of children from a previous marriage. The decisions to have children after a positive HIV diagnosis are taken despite the fact that they go against the advice of both health workers and community authorities, showing that couples living with HIV take reproductive decisions beyond the biomedical risk assessments.

**Conclusions and Recommendations**
The study recommends that couples’ decisions cannot be dismissed as ‘irrational’ and something that must be prevented, argues that it is more fruitful to look at the people involved as individuals with agency that try to find a meaningful way in their environment where marriage and children are central parts of life content. The study therefore recommends that people living with HIV want to marry and have children must be recognized, and that information about safe ways to do this must be prepared and made available.

**Voluntary medical male circumcision (VMMC) program reflection: Bwaila clinic from inception to excellence**


**Introduction**
I-TECH has been working in Malawi in collaboration with MoH with funding from PEPFAR through CDC/HRSA to support health systems capacity building initiatives since 2003. I-TECH aims to identify and scale-up cost-effective service delivery models. In September 2012, I-TECH joined other partners in supporting MoH to scale-up VMMC in Lilongwe District, which was identified through modelling as a high impact district, potentially preventing one HIV infection for every nine circumcisions conducted.

**Methods**
I-TECH approach has been to build capacity through training of Health Care Workers (HCWs) in VMMC as per Malawi’s National Policy Guidelines, and provide VMMC services at designated static and mobile sites using the Model for Optimizing Volume and Efficiency (MOVE). I-TECH has also supported national VMMC initiatives and promoted Quality Assurance/Quality Control through on-site mentoring of HCWs, and strengthened the VMMC supply chain management system in collaboration with the PEPFAR VMMC team.

**Results**
By 31st August 2013, 15,427 clients were registered for VMMC. Of these, 14,146 were circumcised. High quality services were provided, with 0.76% moderate and severe adverse events (AEs) documented, well within the accepted <2% threshold. I-TECH successfully institutionalised task-sharing and task-shifting through the use of nurses and clinical officers as key VMMC providers. A combination of innovative strategies for demand creation was implemented through the use of community mobilizers, religious and community leaders, and traditional circumcisers. The following challenges encountered included delay in program startup and scale-up due to logistical bottlenecks, and failure to mobilize men over 24 years of age.

**Conclusions and Recommendations**
Mutual trust and close collaboration between health planners and managers at district and national levels is a critical component of successful VMMC scale-up. Task-shifting and task sharing in VMMC service provision is feasible, safe, and increases efficiency. Innovative demand creation approaches
are needed to successfully create and sustain VMMC demand.

The implication of Use of Intermittent Providers in VMMC Campaign: Adverse Events Experience from Lilongwe District


Introduction

Assessing adverse events (AEs) occurring post-circumcision in a resource constrained setting presents a challenge. This paper examines distribution of adverse events (AEs) over time at multiple locations, and compared with the provider’s performance in the 30-day VMMC campaign.

Methods

Although VMMC is routinely conducted in private and public hospitals, the frequency and volume of VMMC procedures tend to be too low to maintain provider skills at an adequate level. VMMC providers for the Lilongwe District VMMC campaign were identified from the Lilongwe District Health Office, I-TECH and other Districts to fill the anticipated shortage of human resources during the campaign. VMMC providers were offered a two-day didactic orientation by the National VMMC Trainer of Trainers before they could participate in the campaign.

Results

61 VMMC providers were involved in the campaign. Of these (n=25) were intermittent providers drawn from various Districts; Chitipa, Dedza, Lilongwe, Ntchisi, Karonga, Kasungu and Mulanje to cover provider shortage in Lilongwe. We observed a steady rise in adverse events (AEs) 1.04% (n=16) in the first two weeks of the campaign and a dramatic drop in the following weeks 0.9% (n=9) and an eventual flat lining thereafter. The AEs distribution are suggestive of use of intermittent providers, in other words, those whose MC procedure skills appeared rusty in the beginning but eventually improved with time.

Conclusions and Recommendations

A key lesson to VMMC campaign planners and implementers is to consider practical skills retraining to intermittent VMMC provider before including them in a campaign, as a strategy to minimize AEs. A two to three day provider placement shadowing experienced VMMC providers should provide adequate experience for intermittent providers to refresh their skills and reduce the AE profile of a campaign.

Cotrimoxazole Prophylactic treatment prevents Malaria in children in sub saharan Africa: A Meta Analysis

N. Mbeye, M. Davies, K. Phiri, F. ter Kuile, M. Egger, G. Wandeler

Introduction

Cotrimoxazole prophylactic treatment (CPT) prevents opportunistic infections and reduces mortality in HIV-infected patients. Its use is recommended for HIV-infected children and those exposed to HIV until infection is excluded. Estimates of the effectiveness of CPT in reducing the incidence of malaria vary widely. We performed a systematic review and meta-analysis of studies that analyzed the impact of CPT on malaria incidence and mortality in children in sub-Saharan Africa.

Methods

We searched PubMed and EMBASE for randomized controlled trials (RCT) and cohort studies assessing the association between CPT and malaria incidence or mortality in children. Cohort studies compared HIV-infected or HIV-exposed children on CPT with HIV-uninfected or unexposed children not on CPT. Duration of follow-up ranged from 3 to 28 months. Results from individual studies were combined using random-effects meta-analysis. For cohort studies, results were adjusted for potential confounders. Incidence rate ratios (IRR) are reported for malaria and hazard ratios (HR) for mortality.

Results

Eight studies (3 RCTs and 5 observational studies) including 2,336 patients on CPT and 1,624 not on CPT evaluated the association between CPT use and malaria incidence. Two RCTs and one observational study assessed the association between CPT and mortality. Patients on CPT were less likely to develop malaria episodes than those without prophylaxis (IRR 0.36, 95% Confidence interval (CI): 0.22-0.62) but there was substantial between-study heterogeneity (I-square=92.4%, p<0.001). CPT significantly reduced mortality (HR 0.57, 95% CI: 0.45-0.74) with little heterogeneity (I-square=0.0%, p=0.96). The protective efficacy of CPT was highest in a study from Mali, where the prevalence of antifolate resistant plasmodia was lowest (prophylactic efficacy of 99.5%, 95% CI: 96%-100%).

Conclusions and Recommendations

This systematic review and meta-analysis shows that CPT reduces malaria incidence and mortality in children in sub-Saharan Africa, but study designs, settings and results for malaria were heterogeneous. CPT appears to be beneficial for HIV-infected and exposed as well as HIV-uninfected children in sub-Saharan Africa. More data are needed on its continued effectiveness in light of increasing concerns of antifolate resistance.

High risk of neutropenia in HIV-infected individuals taking nevirapine-based Antiretroviral therapy

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B. Zima, B. Gausi, M. Mgombe, A. Ngwinja, C. Gamuti, J. Mallewa, F. Dzinjalamala, M. Mukaka, V. Mwapasa

Introduction

A large proportion of HIV-infected individuals in Africa are treated antiretroviral therapy (ART) containing Non-Nucleoside Reverse Transcriptase Inhibitors such as nevirapine (NVP) and efavirenz (EFV) while a small proportion are treated with the protease inhibitors, ritonavir boosted lopinavir (LPV/r). A few studies have compared the hematological safety of these types of ART.

Methods

Using cohort study designs, we collected peripheral blood samples for hematological assays at baseline and weekly intervals for 28 days in HIV-infected individuals treated with ART containing NVP (n=15), EFV (n=15) and LPV/r (n=15). We compared the baseline prevalence and incidence of hematological abnormalities and adverse events. We used the DAIDS criteria to classify the abnormalities.

Results

At baseline, individuals taking NVP or EFV-based ART had higher median CD4 cell count and were more likely to be female than those taking LPV/r-based ART. The prevalence of anemia, thrombocytopenia and lymphopenia was similar among the three groups. However, the prevalence of neutropenia was higher in those taking NVP (40.0%) and LPV/r-based ART (40.0%) than those taking EFV based ART (13.0%, p<0.05). The incidence of neutropenia was markedly higher in those taking NVP-based than EFV or LPV/r-based ART. Two individuals on NVP-based ART developed grade 3 neutropenia but none in those taking EFV- or LPV/r based ART. However, none of the neutropenic cases were clinically significant or persistent.

Conclusions and recommendations

NVP and LPV-based ART was associated with a higher risk of neutropenia. Close monitoring is required in individuals taking these regimens, especially in those taking concomittant drugs that cause neutropenia.

Palliative care needs and services in rural Malawi: results from Neno district

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Introduction

Access to comprehensive palliative care – including pain management and psychosocial support – is limited in Africa, particularly in rural settings. Partners In Health, a nongovernmental organization, collaborates with MOH to provide comprehensive health services in Neno District.

Methods

To determine the scope of palliative care needs and services and to set implementation priorities, we interviewed a consecutive sample of 37 patients and 12 caretakers presenting for routine HIV care, in-patient hospital care, or chemotherapy for Kaposi sarcoma at four health facilities in Neno District from January—February 2013. We developed and implemented a structured interview instrument incorporating the African Palliative Outcomes Scale (APOS).

Results

Patients and caretakers interviewed were young (median age=37) and predominantly female. One-quarter of patients (n=10) had HIV as their primary diagnosis. More than half (n=19) had cancer, with Kaposi sarcoma being the most prevalent (n=13). Almost all patients (86%) reported pain (mean APOS= 3.32), with 64% experiencing moderate or severe pain (APOS = 3). Two-thirds cited a need for socioeconomic support: 67% needed income support, 61% food and 61% home repair. Most patients (54%) reported a preference for home-based care. Caregivers attended to patients 17 hours/day with modest confidence in their caretaking abilities (mean APOS= 3.91) but also much worry (mean APOS= 3.64)

Conclusions and Recommendations

Our data reveal a high prevalence of pain and unmet psychosocial needs among patients with chronic, life-limiting diseases in rural Malawi. Most patients seeking palliative care had cancer, reflecting the growing burden of non-communicable diseases. Caregivers provide valuable assistance, but require additional support and counseling. Palliative care programs in Neno, and likely elsewhere in Malawi, will best serve patients and their caregivers by employing home and community-based strategies to aggressively manage the symptoms of poverty alongside those of serious illness.

Use of clinical practice cases as a means of improving pediatric HIV care in Malawi

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Introduction

While children make up a notable proportion of HIV-infected patients, issues affecting this population are often neglected in national programs. Despite emphasis on pediatric care and prevention in the 2011 Malawi PMTCT/ART guidelines, providers at health facilities continue to express limited comfort with pediatrics. Baylor-Malawi has experience in pediatric mentorship through MPHATSO and Tingathe programs, and focuses on mentorship of clinical staff and systems strengthening in central Malawi. As program expansion continues, the need for standardized teaching tools has been identified. The mentorship experience is often busy, with the bulk of the encounter spent in active mentor to mentee side-by-side patient care. At the end of the encounter, there is limited time for didactic lecture-based teaching, often the tool used to teach fundamental concepts of pediatric HIV care.

Methods

A set of standardized clinical practice cases (CPCs) was designed to provide a consistent and concise pediatric HIV education to providers. Topics include HIV Diagnosis,
There is need to increase awareness on the need of taking vaccination schedules. Babies under 16 weeks old typically have low vaccination rates. The vaccination programme usually is not adhered to. Complete 3-dose coverage of 13vPCV is around 60% after 19 months of the programme. The vaccination coverage among infants aged 0-16 months old infants from Kabundula health area was launched in Malawi in November 2011. A Lot Quality Assurance Survey was undertaken in March and October 2012 and June 2013 to accurately estimate local and total vaccination coverage.

Methods
A random samples of 30 infants under-4 months and 30 infants 4-16 months old in each of 20 village clinic catchment area 'lots' in Kabundula health area of Lilongwe district had PCV13 doses and dates from their health passports recorded during household visits. Health passports were photographed for verification. The results for the first three surveys are reported here.

Results
A total of 4,105 infants were identified of which 77.6%, 83.7% and 81.7% of the infants were aged 4-16 months old, respectively. The findings show the coverage of 13vPCV1, 13vPCV2 and 13vPCV3 to be: March 2012: 60.6%, 26.9% and 8.6%; October 2012: 90.9%, 76.6% and 56.5%; June 2013: 90.8%, 79.6% and 62.9%, respectively. Furthermore, 3 dose coverage was high in infants aged 4-16 months at 10.2% (Mar12), 66.9% (Oct12) and 76.1% (Jun13) than in under-4 months at 2.7% (Mar12), 3.1% (Oct12) and 3.2% (Jun13).

Conclusions and Recommendations
Complete 3-dose coverage of 13vPCV is around 60% after 19 months of the vaccination programme. The vaccination schedule of 6-10-14 weeks is usually not adhered to. Babies under 16 weeks old typically have low vaccination rates. There is need to increase awareness on the need of taking children for vaccination on time. A constant supply of vaccine material is needed to ensure adequate coverage.

Moderate pulse oximetry agreement levels achieved by Malawian healthcare providers caring for children with pneumonia.

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Introduction

In Malawi, active HIV case-finding in TB patients is robust via a national PITC programme at all TB facilities. However, current TB case-finding in HIV-infected populations is not as vigorous and relies on self-presentation by patients or recognition by clinicians. National ART guidelines outline formal TB screening, but this is not routinely done in practice. National TB guidelines call for contact tracing of TB patients but this is also not done.

Methods

Tingathe is a community-based program that utilizes community health workers and clinical mentors to improve Prevention of Mother to Child Transmission, Early Infant Diagnosis and Pediatric HIV Care and Treatment Services. The program is currently operating in 15 sites in Malawi's Central Region. The Tingathe TB project will use CHWs in TB case-finding among the HIV-affected groups: HIV-infected pregnant women, HIV-infected lactating women and their exposed infants, HIV-infected children, and patients’ families. TB case-finding will be done either through primary case-finding, integrated in current HIV clinical activities, or secondary case-finding, focused on household contact tracing. Clinical Mentorship will increase screening of TB in HIV-infected patients. The aim of the TB Project is to improve case finding, linkage to care, and treatment supervision among HIV-affected individuals.

Results

The Tingathe programme has experience in community-based work, HIV case-finding, ART adherence monitoring, and mentorship. The use of CHWs in PMTCT case management has resulted in improved outcomes among HIV-infected mothers and exposed babies. Although the TB project is yet to launch, there is optimism that it will yield similar results and that it will help the National TB and ART programmes achieve their goals.

Conclusions and Recommendations

A formal evaluation will be conducted on the efficacy of CHWs in TB case-finding and case management. Results will provide important data on whether the integrated HIV-TB approach utilizing CHWs will improve TB case identification as well as clinical outcomes in children living with HIV and TB.

Prevalence and predictors of a positive Cervical cancer screening test in a Sexually Transmitted Infection clinic in Lilongwe, Malawi


Introduction

In Malawi, cervical cancer is the most common cancer among females and a leading cause of cancer-related mortality. Cervical cancer can be averted if pre-cancerous lesions are detected early and treated. Visual Inspection with Acetic Acid (VIA) is an effective screening method for preventing cervical cancer and is sustainable in resource-limited settings. We assessed prevalence and predictors of a positive VIA following its introduction in a sexually transmitted infection (STI) clinic in Lilongwe, Malawi.

Methods

From October 2012 to January 2013 all females 25-45 years and females <25 years at clinician discretion received VIA screening at the Kamuzu Central Hospital STI Clinic. We calculated the prevalence of a positive VIA result and used logistic regression to identify predictors of a positive result.

Results

During this 3.5-month period, 86 women had VIA screening results. Median age was 29, 77% were married, 43% had at least some secondary education. Forty three percent were HIV-infected and 63% had an STI using Malawi’s syndromic management algorithm. Nineteen percent were VIA-positive, 79% VIA-negative, and 2% VIA-uncertain. The prevalence of a VIA-positive result was 7% in HIV-uninfected women and 33% in HIV-infected women. Factors significantly associated with a positive VIA result were HIV infection (OR: 6.1, 95% CI: 1.5, 24.4) and pain during intercourse (OR: 4.5, 95% CI: 1.2, 16). Genital warts (OR: 2.4, 95% CI: 0.5, 10.8) and genital ulcers (OR: 3.1, 95% CI: 0.5, 20.3) were associated with an increased odds of being VIA-positive, though this trend was not statistically significant.

Conclusions and Recommendations

The prevalence of an abnormal VIA was high among Malawian women attending an STI clinic, especially for those with HIV. To prevent cervical cancer mortality, further expansion of VIA screening is needed in Malawi for women at high risk.

Home visits to validate self-reported use of insecticide-treated bed nets in Machanga district, Malawi

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Introduction

Studies evaluating use of insecticide-treated bed nets (ITNs) rely on self or caregiver-reported use because direct observation is usually not possible. However, self-reports may be inflated due to recall bias or social pressure to use ITNs, resulting in underestimates of true ITN effectiveness in reducing malaria risk. Following caregiver interviews conducted at centralized locations, we validated caregiver-reported ITN use through visual inspection of nets during home visits.

Methodology

As part of a malaria cohort study in children (ages 6-59 months) in Machanga, caregivers were interviewed each month regarding their child’s history of ITN use, including ITN use the previous night. Between December 2012 and January 2013, a simple random sample of enrolled children (n=173) was selected and their caregivers were visited at their home within three days of the initial monthly interview by a surveyor who was blinded to their initial report of ITN use. The surveyor asked if the child used an ITN the previous...
night and requested to see the ITN used by the child.

Results
Out of the 173 selected children, 30 had not slept in their own home the night before the initial monthly interview and were removed from analysis. For the remaining 143 children, 141 (98%) caregivers had reported use of an ITN the night prior to the initial interview. Similarly, 141 (98%) caregivers reported ITN use the night prior to the home visit. However, 4 (2%) caregivers reported discordant results in the home visit compared to the initial interview. Considering the home visits as the gold standard, the diagnostic odds ratio of caregiver-report of ITN use was 11.2 (95% confidence interval, 0.42, 297.75).

Conclusions and Recommendations
Results from self-reports and home visits showed a high degree of agreement, indicating that ITN use patterns are high and consistent in Machinga District.

Epidemiology of urban malaria in Malawi
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Background
Despite rapid urbanization and environmental changes in most areas of sub-Saharan Africa, Plasmodium transmission and malaria disease in urban settings remains poorly understood. The Malawi International Center for Excellence in Malaria Research has investigated the ecological, social, and behavior determinants of malaria risk in Blantyre city and the neighboring rural areas.

Methods
A prospective case control study was conducted in and around Blantyre city, comparing children aged 6 -59 months who were diagnosed at health facilities with malaria disease to non-malaria sick controls. Malaria disease was defined as fever/ history of fever with malaria parasites both by microscopy and PCR. Controls were sick children attending the same clinic with no parasites, matched to the cases by age, location and time of recruitment. Ecological, social, environmental and vector data were collected from the households of both cases and controls during a follow-up home visit. The children had visited four urban (Chilomoni, Bangwe, Ndirande and Zingwangwa) and two rural (Mpemba and Chika) health facilities.

Results
From April 2012 through July 2013, 131 and 266 children were recruited as cases and controls, respectively. Spending time away from home (OR 2.47, 95% Confidence Interval: 1.05, 5.83) and social economic status as measured by material possessions (p=0.01) were important predictors of malaria disease. Use of ITN last night (p=0.49) and open eaves in house (p=0.53) were not significant predictors of disease. Anopheles mosquitoes were rare with only 36 mosquitoes collected from all 377 households. Relatively more Anopheles came from households of children attending “rural” (8%) clinics than “urban” (0.6%).

Conclusions and Recommendations
It is not clear whether there is active Plasmodium transmission in urban Blantyre. A larger sample and more entomological data are needed to be certain that Anopheles mosquitoes are transmitting in urban households.

Comparative analysis of malaria diagnosis by nested PCR on dried blood spots and placental histology in microscopy-negative Malawian pregnant women on IPTp

Introduction
Malaria infection in pregnant women on intermittent preventive treatment in pregnancy (IPTp) often presents low parasite densities at delivery and this poses a great diagnostic challenge. In this study, a nested polymerase chain reaction (nPCR) assay for 18S rRNA gene of Plasmodium falciparum was conducted to detect malaria infection in microscopic smear-negative Malawian pregnant women on IPTp.

Methods
A sample pooling strategy was developed for screening malaria infection using dried blood spots samples (DBSs) collected at delivery. Based on histology diagnostic results in 619 available smear-negative samples as well as 7.6% prevalence of malaria infection by blood smear in pregnant women at delivery, each sample pool contained either 4 DBSs from histology-positive samples or 10 DBSs from histology-negative samples prior to DNA extraction for first round of nPCR screening. For those nPCR-positive pools, DBSs from the positive pools were further individually extracted and second round of nPCR assay was performed.

Results
Overall, of 619 smear-negative DBSs, 179 (28.9%) were positive by histology and 52 (8.4%) were positive by nPCR. Among these histology-positive samples, 39 (21.8%) were active infection (acute and chronic) and 140 (78.2%) were past infection. Using the histology results as references, there were 71.8% nPCR-positive in active infection group, 7.1% nPCR-positive in past infection group and 3.2% nPCR-positive in histology-negative group. There was no significant difference between the histology and nPCR methods (2 = 2.2218, P = 0.136076) in detection of active infection.

Conclusions and Recommendations
nPCR combined with a proper sample pooling strategy is a practical and sensitive method to detect low density and active malaria infection at delivery. It will be beneficial to submicroscopic malaria diagnosis while histology technique is not available for malaria in pregnancy studies.
Introduction
Use of molecular diagnostics such as PCR has led to the recognition that the majority of prevalent malaria infections are asymptomatic, and modeling suggests they play an important role in malaria transmission. We present data on asymptomatic parasitemia (AP) from a cross-sectional survey of children aged 6–59 months in Machinga enrolled into a cohort study.

Methods
A census of six villages found 1,667 age-eligible children, of whom 1200 (72%) met inclusion criteria and consented. Caregivers were questioned regarding the child’s illness history over the previous two weeks and a finger-prick blood sample was taken for slide microscopy and PCR.

Results
In March–April 2012, 440 (37%) out of 1186 providing a blood sample had parasitemia by PCR. Among parasitemic children, 291/430 (68%) had not been ill in the previous two weeks; 88% were not ill at the time of blood collection; and 89% had axillary temperature <37.5 °C. Among children not ill in the past two weeks, factors related to AP in a multivariate log-binomial model, included: age (16% increased risk per year of age, p<0.0001), wealth status (45% decreased risk for those in the wealthiest quintile, p=0.0002), and sleeping under a bednet the previous night (31% decreased risk, p<0.0001). No measured characteristics of parasitemic children differed between those reporting illness and those not, except antimalarial use in the prior two weeks (28% among symptomatic and 0% among asymptomatic children).

Conclusions and Recommendations
Our results suggest that fever surveys would miss more than two-thirds of malaria infections and mass screen and treat strategies using microscopy or rapid diagnostics with similar sensitivity would miss more than a third of infections.

Dihydropteroate synthase 581 mutations is associated with increased parasite densities at delivery in women who receive intermittent preventive treatment with sulfadoxine-Pyrimethamine in an area with high drug resistance in Malawi


Introduction
Intermittent preventive treatment in pregnancy (IPTp) with sulphadoxine-pyrimethamine (SP) is recommended for the control of malaria in pregnancy in sub-Saharan Africa, but parasite resistance resulting from mutations in Plasmodium falciparum dihydrofolate reductase (Pfdhfr) and dihydropteroate synthase (Pfdhps) threatens its effectiveness. We compared parasitological and morbidity endpoints among parasitaemic IPTp-SP recipients with and without the Pfdhps 581G mutation.

Methods
HIV-uninfected women with singleton pregnancies were enrolled. Peripheral blood and placental samples were collected, and birth weight and gestational age recorded. Detection PCR assays were run on all samples; PCR positive samples were genotyped. Left-censored survival analysis was used to calculate geometric mean parasite densities (GMPD) for PCR positive, smear negative samples accounting for the limit of detection of microscopy, assumed at 40 parasites/ul.

Results
Samples from 672 out of 710 women from Machinga and 1137 out of 1142 women from 3 sites in Blantyre were analyzed by PCR. 220/1809 (12.1%) had malaria detected by PCR; 78/220 (35.5%) were microscopy-positive. 202/220 were genotyped for pfdhps-581; 17 had mutant (8.4%) and 185 wildtype infections of whom 16/17 (94.1%) and 154/185 (83.2%) had received 2 doses of IPTp-SP (p=0.32). All Pfdhps-581G mutant samples were also mutated at Pfdhps-540. Pfdhps-581G was associated with higher risk of patent infections and GMPD/ul: maternal peripheral blood: 70.6% vs. 26.5%, Prevalence ratio (PR) [95% CI]: 2.74 [1.82-4.12], P<0.0001, and Ratio [95% CI] of GMPD: 4.09 [1.59-6.59], p=0.001, and in placental blood 52.9% vs. 17.8%, PR[95% CI]: 2.74 [1.61-4.67], P=0.0002, and Ratio [95% CI] of GMPD: 3.47 [0.52-6.42]. There were no significant differences in Hb (mean difference 0.14 gr/dL, 95%CI -0.95-0.67) and birth weight (mean difference 96.5gm, 95% CI -407.2-214.1).

Conclusions and Recommendations
The Pfdhps-581G mutation, when present in addition to the quintuple dhps/dhfr mutant is associated with increased maternal peripheral and placental parasite densities among SP recipients. Monitoring the Pfdhps-581G mutation prevalence is critical in areas where IPTp-SP is used.

Insecticide-treated mosquito nets possession and
use in Machinga, Malawi six (6) months after a mass-distribution campaign


Introduction

Insecticide-treated nets (ITNs) are one of the most effective measures for preventing malaria. Hence, mass distribution campaigns are being used to rapidly achieve universal coverage and increase utilization. We evaluated the impact of the ITN universal campaign on ownership and usage in Machinga.

Methods

We conducted two cross-sectional household surveys in the six villages, collecting data on bed net ownership and usage, demographics of household members and household characteristics.

Results

Prior to the mass distribution campaign 2,200 households were surveyed and 2,657 afterwards. The proportion of households with at least one ITN increased from 69.7% (95% CI = 67.7 -71.6) before the campaign to 84.1% (95% CI = 82.7 -85.5) afterwards. After the campaign, the mean number of ITN owned per household increased from 1.1 (95% CI = 1.0 -1.2) to 1.8 (95% CI = 1.7 -1.9). Households with ITNs to cover all sleeping spaces increased from 44.8(95% CI = 42.7 -46.9) to 70.3(95% CI = 68.6 -72.0) whilst households with at one ITN for every two residents increased from 23.3(95% CI = 21.5 -25.0) to 56.3(95% CI = 54.4 -58.2). ITN usage in all residents rose from 58.2% (95% CI = 57.2 -59.3) to 70% (95% CI = 69.1 -70.9). The increase in ITN use was highest amongst school going children aged 5 –15 years old (from 49.0% to 65.6%) compared to only a six percent (from 71.1% to 76.7%) increase in children aged between 6 – 59 months.

Conclusions and Recommendations

Mass campaign improved ITN ownership and use in this area. However, the goal of universal coverage of having one ITN per two residents was not achieved. This means multiple campaigns supported continuous delivery systems will have to be promoted to achieve universal coverage.

Pneumonia hospitalization in the era of pcv13 vaccine: review of pneumonia management forms from Kapiri, Mchinji district and Kamuzu Central Hospitals.

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Introduction

Pneumonia is one of the leading causes of child mortality in Malawi. The PCV13 pneumonia vaccine was launched in Malawi in November 2011. A retrospective and prospective data collection system (using pneumonia patients recording forms) was established to provide comparative changes in pneumonia over a period of time.

Methods

Two Microsoft Access datasets were developed where data from over 40 hospitals country wide from 1999 to date were being entered. Very severe and severe pneumonia cases with duration of hospitalization for the period Sept’99-Oct’11 and Nov’11-Aug’13 from Kapiri, KCH, and Mchinji district hospital were retrieved for calculating duration of hospitalization.

Results

A total of 7,839 (Very severe pneumonia: 1889; Severe Pneumonia: 5950) cases were retrieved from retrospective database and 6,120 (Very severe pneumonia: 2696; Severe Pneumonia: 3424) cases from prospective database of which 41% were vaccinated (Very severe pneumonia: 44%, and Severe pneumonia: 35%). The findings show an average hospitalization of 93 hours (Very severe pneumonia: 102 hours; severe pneumonia: 90 hours) per person before introduction of PCV13 vaccine and 78 hours (very severe pneumonia: 84 hours; Severe pneumonia: 74 hours) per person after/during the introduction of PCV13 vaccine.

Duration of hospitalization is lower in vaccinated infants (very severe pneumonia patients: 83 hours; severe pneumonia patients: 73 hours) than in unvaccinated infants (Very severe pneumonia patients: 84 hours; severe pneumonia patients: 75 hours).

Conclusions and Recommendations

Less duration of hospitalization is being experienced few months after introducing PCV13 vaccine in Malawi. Introduction of PCV13 vaccine has an impact on duration of pneumonia hospitalization.

HIV mentoring at an integrated health centre

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Introduction

HIV mentoring typically occurs at health centres during ART clinic days when providers are seeing a high volume of HIV-infected patients. However, in several districts in Malawi, health centres have integrated HIV care into the daily outpatient clinic setting. This raises challenges for HIV mentoring.

Methods

We performed individual interviews with 2 HIV mentors in Northern Malawi, and also performed individual interviews with 3 HIV clinical provider mentees who work in integrated clinics and have been mentored by our program. Questions involved challenges and benefits to mentoring in an integrated clinic.

Results

Mentor interviews were performed with 1 female nurse and 1 male clinical officer. Mentors identified insufficient volume of HIV-infected clients as the biggest challenge to mentoring in an integrated clinic. Other challenges identified included limited time to mentor on HIV care due to concern about other patients waiting, lack of concentration of the mentee due to concern about the queue outside, lack of continuity of mentoring, and concerns about confidentiality as it was obvious to others that HIV consultations took longer than other visits. HIV mentors described several advantages to
integrated mentoring including more opportunities to mentor on provider-initiated testing and counselling (PTC), mentoring on health systems issues that result in overall (not only HIV-specific) systems strengthening and opportunities to mentor on clinical issues relevant to both HIV-infected and non-infected patients. Overall, mentors preferred working in non-integrated health centres. A total of 3 mentees were interviewed: 2 male nurses and 1 male medical assistant. All 3 mentees felt comfortable to be mentored in an integrated setting. They reported less workload compared to ART clinic, less discrimination for clients, more patients being attended to at one time and felt they were gaining adequate skills and knowledge about HIV from their mentors in the integrated setting.

Conclusions and Recommendations
Mentoring on HIV care in dedicated ART clinic settings was preferred by mentors but mentees were satisfied with being mentored in the integrated health setting. Further research is needed on how to optimize mentoring in integrated clinic settings.

Vaccine uptake in Malawian infants following introduction of pneumococcal conjugate and Rotavirus vaccines.

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Introduction
The objective of the study was to determine vaccination population-coverage and predictors of vaccine up-take in vaccine-eligible following Pneumococcal Conjugate and Rotavirus Vaccine roll out.

Methods
We conducted continuous prospective large-scale surveillance of all age-eligible children residing in the Karonga DSS population, to measure vaccination coverage. We collected data on socio-demographic, geographic and other covariates. We simultaneously conducted surveillance for laboratory confirmed rotavirus and IMCI-defined severe pneumonia and WHO-defined radiological pneumonia within the same population. We recorded vaccine schedule completion and timeliness or other schedule deviations. We used multivariable logistic regression to assess association between completion and timeliness of vaccination and other covariates. We compared children with medically attended rotavirus negative diarrhoea with healthy community-based children to assess for differences in vaccine uptake and predictors of compliance with full schedule.

Results
Between Nov 2011 and August 2013, we reviewed the vaccination records of 1,678 age-eligible children. Record was available in 1,598. Among age eligible children, coverage was 67.9%, 62.5% and 58% for PCV13 doses 1, 2 and 3 respectively. For rotavirus vaccine coverage was 63.8% and 56.4% for dose 1 & 2 Father's education, water source, household income, place of birth and distance from the nearest health facility were associated with vaccination uptake, suggesting lower vaccine coverage among those with poor socio-economic status.

Conclusions and Recommendations
Long distances from health facilities and poor socio-economic factors are predictive of vaccine uptake. Targeted vaccine outreach programmes to improve coverage among the poorest of the poor are urgently required.

Safety assessment in primary mycobacterium tuberculosis smear microscopy centers in Blantyre in 2013, Malawi: a facility based cross sectional survey.

J. Majamanda, P. Ndhlouvu, I. Shawa

Introduction
TB is caused by Mycobacterium tuberculosis and is transmitted through coughing, sneezing, laughing and singing. Laboratory workers’ risk of infection is 3 to 9 times higher than the general public as they handle potentially infectious samples. Laboratory safety should therefore be prioritized and optimized to provide sufficient safety to laboratory workers. The objective was to assess the safety of the laboratory workers in TB primary microscopy centres in Blantyre urban.

Methods
TB primary microscopy centers in Blantyre urban were assessed in aspects of equipment availability, facility layout, and work practice, using a standardized WHO/AFRO ISO 15189 checklist for the developing countries which sets the minimum safety score at 80%. Each center was graded according to the score it earned upon assessment.

Results
The safety hoods were not functional in Ndirande, Lilangwe and Chileka microscopy centers. No safety hood was found in South Lunzu. In Ndirande and Limbe the exhaust ducts face the patients’ waiting area and door to the laboratory, putting them (patients and laboratory technicians) to a greater risk of infection when smear preparation begins. Bangwe, Chilomoni, Ndirande, Chileka, South Lunzu and Limbe microscopy centers had no sputum transportation boxes.

Conclusions and Recommendations
There is a great compromised safety in the TB microscopy centers in Blantyre urban. Only one (1) microscopy center out of nine (9) reached the minimum safety requirement representing an 89 percent (%) failure of TB primary microscopy centers to provide safety to laboratory workers. Laboratory conditions and safety procedures in TB primary smear microscopy centers in Blantyre urban are poor. Government and other stake holders should therefore be committed in addressing the safety challenges of TB laboratories in the country (in primary TB microscopy centres and other referral centers which face the same challenges) to ensure safety to the laboratory workers.
Tracing recent community mycobacterium tuberculosis transmission using tuberculin skin testing in the under-5s in rural Malawi

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Introduction
A key factor sustaining the tuberculosis epidemic is our inability to interrupt the on-going transmission of Mycobacterium tuberculosis (MtB). We know most transmission occurs outside the household, but not where. We aimed to identify locations and sources of recent transmission in a rural HIV-prevalent community using MtB infection in young children as sentinels of infectious adult tuberculosis.

Methods
The study is ongoing in the Karonga demographic surveillance site. We have detailed data on familial relationships, socioeconomic factors and all diagnosed tuberculosis patients. Children aged <5 years with consenting guardians undergo tuberculin skin testing, which will be repeated after 12 months. Children with evidence of ‘possible’ incident MtB infection (induration = 10mm in under 1 year-olds or an increase of = 6mm from <10mm to >10mm between rounds) also have blood taken for an interferon gamma release assay (IGRA). The movement and contacts of each recently infected child are recorded through guardian interviews. Adult contacts (household, neighbourhood and regular visitors) are screened for tuberculosis.

Results
Initial round identified ‘possible’ incident infection in 141/741 (19%) of the under-ones (in whom a single test is informative) using a 10mm cut-off. Of these, 19/133 (14%) who had an IGRA had a positive result. 44/741 (6%) under-ones had induration = 15mm. 1312 contacts (of 100 under-ones with ‘possible’ infection) have been screened for TB. We have identified one minimally symptomatic smear-positive (3+) female, resident within 50 metres of 4 children with a TST 15mm. A map of prevalence of TST 10mm in all children under 5 years by geographically defined areas within the demographic surveillance site demonstrates there are areas where prevalence of TST 10mm is high which requires further investigation. The second round of skin testing has started and 1061 skin tests have been placed and read to date. Preliminary findings from this round will be available by November.

Conclusions and Recommendations
Limitations evident from the first round include misclassification of MtB infection in the under-ones as a high proportion of induration 10mm in the under-ones is likely to be due to effect of BCG vaccination. Better definition of incident infections from the second round should help reduce misclassification. Identifying recent transmission in a setting with a well-implemented tuberculosis control programme may pinpoint transmission “hot spots”.

The quality of care of diabetic patients in rural Malawi: a case of Mangochi district

Abbas Assayed Adamson Muula, Moffat Nyirenda

Introduction
Diabetes mellitus is becoming a global public health problem. In Malawi, the prevalence of diabetes is 5.6%, but the quality of care has not been well studied. The aim of this study was to assess the quality of care provided to diabetic patients in Mangochi district.

Methods
This was a cross-sectional descriptive study. Quantitative data were collected using questionnaire from a sample of 75 diabetic patients (children and adults) who attended the diabetes clinic at Mangochi District Hospital between 20012 and 2013. Qualitative data were also collected using semi-structured interviews with eight Key Informants from among the District Health Management Team. Frequencies and cross-tabulation were obtained from the quantitative data. Clinical knowledge about diabetes, care practices and resources were the themes analysed from the qualitative data.

Results
Among the 75 participants interviewed, 46 were females and 29 males. The overall mean age was 48.3 years (45.6 for females and 53.3 for males). More than half of patients had little or no information about diabetes (40.0% (n=30) and 22.7 (n=17) respectively). Almost all patients (98%) were taking their medicines regularly. Only 17.3% (n=13) who inspected their feet regularly. 56% of patients were satisfied about services provision. Two out of six nurses and five out of six clinicians who were trained on diabetes care remained. Although the hospital had guidelines on diabetes management, these were not readily accessible. However, patients received IEC messages regularly. Shortages of some important medicines and laboratory reagents were common.

Conclusion and Recommendations
Quality of diabetes care in Mangochi district of Malawi was sub-optimal due to lack of knowledge and resources. From these findings, we would suggest to the Ministry of Health and partners to invest more in the Non-Communicable Diseases in general and diabetes in particular, with focus on training and other inputs.

Sitting on a live bomb: a close analysis of mental health as Malawi’s national problem-challenges and perceptions

Dickens P. Mahwayo

Introduction
Going by the study findings of The London School of Hygiene and Tropical Medicine in the UK, The University of Cape Town in South Africa and the University Of Melbourne in Australia on mental health of young people in Europe, Asia and South Africa versus availability of mental health professionals to assist, a study with comparative elements to the situation on the ground in the three districts of Mangochi, Machinga and Balaka where numbers of mentally challenged persons in the streets and villages are basically high, was conducted to investigate the
availability of mental health personnel in public health facilities in these districts, the general public's views, perceptions and approach to mental illness/mentally challenged persons and willingness of young people who have completed secondary education to enrol for mental health education.

Methods
REALITY v tool as developed by Engendered Health under the ACQUIRE Project was used of which quantitative, descriptive and explorative method was also used to generate and analyse data. In some cases people interviewed were not necessarily a representative sample in statistical terms but key informants and knowledgeable individuals conversant with mental health issues. Sampling was based on the WHO EPI 30 Cluster Coverage Survey Sampling Formula used: N=Z2(pq)/d2, where N=Sample Size=Statistical Certainty, P=Estimated coverage rate to be investigated, q-1-p and d= Precision desired.

Results
There is severe neglect of peoples mental health hence there is lack of enough qualified mental health nurses and professionals in district hospitals and other health facilities including the only public Mental/Psychiatric Hospital in Zomba which by August 2012 had 1 Psychiatrist, 5 Clinical Officers and 20 Psychiatric Nurses, this can well be described as having fragmented Mental Health systems. There is low budgetary allocation towards mental health for instance total expenditure on Health is 6.6% of the Malawi’s gross Domestic Product (GDP) from which only 1.5% of the total goes towards the mental Health Budget. Publics’ different attitudes, perceptions and approaches to mental illness some of which are cultural and traditional beliefs attuned don’t regard mental illness as an illness at all.

Conclusion and Recommendation
There are bunches of unmet needs for mental health services in Malawi of which this evidence points to the need for the government of Malawi and its development partners to re invigorate their investments and programs. There is an urgent need to expedite the public and stakeholders consultations on the mental Act Draft of 2004 which will eventually lead to the enactment of the new Bill replacing the old Legislation of 1960s.

Patients with low back pain in Malawi: Their attitudes, beliefs and their pain
N.S. Tarimo, I. Diener

Introduction
Patients’ attitudes and beliefs on their LBP play a pivotal role in the recovery process and the ability to returning to functional activity and participation. Holding negative attitudes and beliefs about pain may lead to fear avoidance behaviour. This may lead to disability and pain chronicity. This study therefore, sought to identify attitudes and beliefs about LBP, among LBP patients attending physiotherapy treatment in Malawi. The objective of the study was to identify patients’ attitudes and beliefs on their LBP, among LBP patients attending physiotherapy outpatient treatment in Malawi. The study was conducted at physiotherapy departments of Kamuzu and Queen Elizabeth Central hospitals.

Methods
A quantitative cross-sectional survey was done, using a self-administered questionnaire. The participants were recruited using a convenience sampling method. Twelve (12) statements about attitudes and beliefs on LBP were adopted from the Back Beliefs Questionnaire (BBQ) and from the Survey of Pain Attitudes (SOPA). The Statistical Package for Social Sciences (version 19.0) were used for data capturing and analysis. Descriptive and inferential statistics were used to summarize data. The Chi-square test was used to determine any association between variables and the Alpha level of significance was set at 0.05. All ethical issues relating to the study were sought and adhered to throughout the study period.

Results
There were 205 LBP patients participated in the study. The mean age of the sample was 47.74 years, (SD=13.29). Females constituted 53.2% of the sample. More than half (67%) of the participants portrayed negative attitudes and beliefs about their LBP. A statistically significant relationship between their knowledge, attitudes and beliefs was noted (p=0.04).

Conclusions and Recommendations
The majority of the patients with LBP in Malawi hold negative attitudes and beliefs about their pain. Therefore when managing patients with LBP it is important to identify their attitudes and beliefs about their pain. Changing negative attitudes and beliefs about their pain by providing health education may facilitate recovery and achievement of the treatment goal.

Researching the rising burden of non-communicable diseases in Africa: establishment of a large multi-site cross-sectional study in Malawi

Introduction
Rates of chronic non-communicable diseases (NCDs) such as hypertension and diabetes are rising rapidly in Africa, but there is limited data on their burden, the driving risk factors or their distribution between rural and urban settings – knowledge of which is essential for control purposes. With funding from the Wellcome Trust, we are undertaking large epidemiological surveys in Area 25, Lilongwe and in southern Karonga district, targeting individuals aged 18 years and above, to accurately document the burden and risk factors for common NCDs. We are also investigating the uptake and retention in care among patients who upon being identified to have hypertension or diabetes, are referred to clinical services.

Methods
In Lilongwe, community sensitisation and household listing precede the data collection, whilst in southern Karonga, participants are recruited from the Karonga demographic surveillance site (DSS) where the community is already well characterised. Data collection is done via electronic data capture (EDC) using tablet computers. After collecting demographic data and biophysical
measurements (anthropometric and blood pressure measurements), participants are asked to fast overnight and blood samples are collected the following morning for biochemical analyses, including an offer for HIV screening. Nests within the survey are a number of sub-studies, such as to examine variation in blood pressure measurements, methods for diagnoses of diabetes, as well as to assess chronic complications of diabetes (including the prevalence of foot ulcers, retinopathy and chronic kidney disease).

**Results**
We have so far visited 19 of the 35 National Statistical Office (NSO) designated enumeration areas (EAs) in Area 25 in Lilongwe. We identified 8882 households, where a total of 21958 participants were adults. 1863 individuals have been approached for interviews so far, and 1719 (92%) consented to take part in the studies from June to September 2013. In Karonga, 2208 out of 2266 participants approached so far have been enrolled in the studies from 8 of the 21 reporting groups under the DSS representing a 97% acceptance rate.

**Conclusions and Interpretation**
These data show that there is good acceptance of studies on NCDs even in an urban setting with a new research group. Further, communities have shown a high level of concern about diabetes and hypertension and are willing to engage in relevant studies. Our data should give a definitive account of the burden of NCDs and their risk factors, and inform on intervention strategies.

**First do no harm: illicit financial flows and child mortality in sub-Saharan Africa**
B, O’Hare; I. Makuta; N, Bar-Zeev; L, Chiwaula; A, Cobham

**Introduction**
Poor economic development reduces child survival. One of the main constraints to development and therefore child survival in Sub-Saharan Africa is shortage of capital (development finance), yet more than $930 billion left the continent over the last 40 years as illicit financial flows (IFF). This paper aims to illustrate the scale of the opportunity cost of IFF in terms delay in time to reach Millennium Development Goal number 4 (MDG4) (reducing child survival in Sub Saharan Africa is shortage of capital (development finance), yet more than $930 billion left the continent over the last 40 years as illicit financial flows (IFF)).

**Methods**
The study used continuous decrementing formula to estimate the number of years it would take to reach MDG4 on child mortality (CM) under two scenarios; first under the actual rates of decline in CM and secondly under expected rates of decline of CM if IFF did not occur.

**Results**
In the 34 SSA countries for which data on illicit financial flows is available, less than one-fifth (5 countries) will achieve their MDG 4 target at the current (actual) rates of decline. In the absence of IFF, almost one half of these 34 countries (15 countries) would reach their MDG 4 target by 2015.

**Conclusions and Recommendations**
IFF is an impediment to the fight against child mortality as it drains resources for the latter’s rapid reduction. It unnecessarily elongates the period and thus costs lives.

**Do women’s desires for children and use of family planning have an impact on fertility?**
A, Dasgupta; A, Price; A, Dube; A, Crampin; J, Cleland; A; Baschieri; B, Zaba

**Introduction**
Understanding the relationship between fertility intentions and fertility is important, as it reveals whether women achieve their fertility desires. Few studies have gathered information on intention before the birth of a child. Dube (2012) found that fertility intentions did not seem to translate into family planning (FP) use. We take the analysis one step further, and look at the impact of fertility intentions and FP-use on fertility.

**Methods**
The Karonga Prevention Study (KPS) operates a demographic surveillance site (DSS). Population-based sexual behaviour surveys (including questions on FP and fertility intentions) started in 2007 and these are linked to the DSS. Event history analysis was used to calculate age-specific-fertility-rates. We allowed for multiple failures in individual records, staggered recruitment times, and gaps in observation time.

**Results**
Unsurprisingly, women who want no more children or want to wait at least 2 years, have lower fertility than women who want a child within 2 years. However, there remain a large number of women who want no more children, but nevertheless go on to have a child. Women who use no FP have higher fertility than women using modern-methods. However, some FP-users still contribute births. These women may be reporting they use FP, but are not using it consistently.

**Conclusions and Recommendations**
It is worrying that many women who do not wish to become pregnant nevertheless go on to have a child. Perhaps these women are not able to translate their intentions into action in order to control their fertility. This calls for improved FP-provision to facilitate women to use services.

**Promotion of male involvement in improving families’ reproductive health through sociolegal frameworks in Malawi: are men aware?**
C.O.F Zamawe; A.L. Dube; G. Masache; G. Wasiri; F. Njuwaluwa ; B. Nambiar ; T. Shand

**Introduction**
Reproductive health implies that people are able to have a responsible, satisfying and safe sex life with the capacity of reproduce and make choices freely. It is against this understanding that governments and its development partners provide social and legal framework that supports families and individuals lead satisfying reproductive lives. However, little is known whether individuals are aware of
these frameworks. We carried out an assessment to determine peoples’ levels of knowledge of socio-legal frameworks that support satisfying reproductive health lives.

Methods
Our study is a national cross-sectional study involving 1000 men aged 18 years and above. Men were asked questions covering a variety of topics on gender equality, parenting, sexual and reproductive health services and legislation on gender equality.

Results
Around 90% of men did not provide any support to their wives during the birth of their last child and over half of the respondents said that family planning is the responsibility of their wives. Although around 88% of men are aware of the maternity leave policy, only less than 10% know about the paternity leave and most of them (over half) don’t agree that this policy should be guaranteed by law.

Conclusions and Recommendations
Despite formulation of policies to promote men engagement in reproductive health, their involvement is still minimal and most of them are not aware of the said policies. There is a need for a bottom up approach in policy formulation and we recommend community awareness campaigns for existing policies.

The opportunities missed by health surveillance assistants in Malawi
A Phiri, S White, C Mahebere-Chirambo, B O'Hare, J. George, L. Puleni, E. Nkhono O. Malema, M. Mphande

Introduction
Health Surveillance Assistants (HSAs) have responsibilities for multiple health tasks. Save the Children, in partnership with the Ministry of Health (MOH), is implementing a project which aims to transition from the existing fragmented community packages towards a single coherent package that will fill gaps in the continuum of care from pre conception through to five years. This is being implemented in the Blantyre district among ninety-three HSAs who serve in Hard to Reach Areas (HTRA).

Methods
This cross-sectional observational baseline study used questionnaires, checklists and focus group discussions.

Results
During interview 63% of 93 HSAs reported to live within the catchment area of their clinic; but 46% are only available 1-2 days a week; non-resident HSAs were more likely to have limited availability (74% of non-resident, versus 31% of resident). The median number of times supervised in the last 6 months was four, 25% had only received 2 supervisory visits. Among 131 mothers of children who had a danger sign at <2 months 38% reported to the HSA, of whom 50% were appropriately referred. Using the Community Case Management checklist an average of 8% of items was missed. Overall the median proportion of missed opportunities during HSA-client interactions was 64%.

Conclusions and recommendations
Supervision is less frequent than recommended by the Ministry of Health. There are missed opportunities at every interaction. Availability 7 days per week should be written into the HSA job description, supervision must be improved. There is need for HSAs at community level to screen high risk pregnant women and neonates in order to contribute towards achievement of MDGs 4 and 5.

Dealing with household correlations in using survey data to estimate risk of diarrhoea in under-five children in Malawi
Tsirizani M. Kaombe, Jupiter Simbeye, Wingston F. Ng'ambo and Mayeso C. Lazaro

Introduction
Statistical inference has played a vital role in estimating the proportion of children under great risk of diseases, such as diarrhoea. However, the data independence that is assumed alongside most classical methods is often empirically unattainable. Hence, statistical models that allow dependent observations have been developed. This study aimed at examining efficiency of such methods in extracting risk factors for under-five child diarrhoea in Malawi, relative to subject-specific models.

Methods
To achieve this, random-effects, generalized estimating equations, survey models as well as subject-specific logistic and Poisson models were applied on the 2010 Malawi Demographic and Health Survey data. The analysis was carried out in Stata package, in which odds ratios were calculated for logistic and incidence rate ratios for Poisson models. The results showed that sizes of estimates and standard errors of survey models were generally lower compared to the rest of the models in all covariates except mother's pregnancy status and interaction of age and breastfeeding in which survey models had larger values. While the other three groups of models produced similar estimates throughout. However, the directions of the estimates from all the models were in agreement.

Results
The models showed significant association between diarrhoea and child's age, region of stay, and mother's literacy level, but disproved influence of child's sex, breastfeeding status, and area of residence, mother's education level, mother's pregnancy status, and breastfeeding by a pregnant mother on the child's risk. The risk was high in children whose mothers were illiterate than those with literate mothers, children from central or southern region compared to northern region, and in children aged below 35 months than above. Further, the value of within-household variations was low in both logit and Poisson random-effects models ( s u 2 = 0.007 and 0.002, respectively), which implied that household observations were almost independent. Hence, survey model results were the most reliable.

Conclusions and Recommendations
It has been recommended that researchers should consider applying survey models in cases where multilevel models reveal low intra-class correlations in the dataset and where the data at hand is from a large survey with known sampling
Exploratory research of government health policy with special reference to high maternal mortality rate in Malawi.

D. Mtotha, L. Mbigi and I. Chiphazi

Introduction
Malawi has been having a high maternal mortality rate which has been above 620/100,000 live births since 1992 (MDHS 1992). Various efforts have been attempted to find a solution to the phenomenon but the trend continues and currently it is at 675/100,000 live births.

Methods
A Multi-method approach was used where qualitative, quantitative and archival methods were used to identify the cause and solutions to the problem.

Results
The findings were reached after several triangulations as follows: Responses from members of the general public from the case study district of Lilongwe stated that high maternal mortality rate was due to harassment of women while in the course of child delivery. That is the reason they go to the TBAs since TBAs treat them with respect and dignity and they don't test HIV/AIDS. Triangulation was done through archival research where records from Ethel Mutharika were reviewed to identify disease specific conditions that caused maternal death for a period of five years. The results showed that 23.3% of deaths that occurred at the facility were caused by HIV/AIDS opportunistic infections.

Conclusions and Recommendations
The study can be generalized as many countries in the sub-Saharan Region made similar observations that the region has the highest HIV and AIDS prevalence which is 34% and has the highest maternal mortality rate which is 500/100,000 live births (WHO, UNFPA, UNICEF 2012). UNAIDS (2012) reports that countries like Botswana, Lesotho, Namibia where the administration of antiretroviral therapy (ART) has been intensified, has shown that maternal mortality rate is declining significantly but they may too not be able to meet the MDGs. It is highly recommended that Malawi should intensify HIV/AIDS prevention and treatment to reduce the high maternal mortality rate.

Perceptions of parents and their adolescent children on sexual reproductive health communication in traditional authority Likoswe in Chiradzulu district

Roselyn C. Kalaw

Introduction
Effective Parent-Adolescent Communication on Sexual Reproductive Health has proved to result in adolescents who delay sexual debut. This results in reduction of risky sexual reproductive health behavior hence the reduction of sexual health problems amongst adolescents. The aim of the study was to explore the perceptions of the parents and their adolescent children on Parent-Adolescent Communication regarding sexual reproductive health.

Methods
This qualitative study guided by a Communication Privacy Management Theory, generated data through in depth interviews and focus group discussions. The population was parents and their adolescent children in and out of school from a district in the southern region of Malawi. Interviews and focus group discussions were audio taped and notes taken simultaneously. Data was analyzed using content analysis. This involved identification of common themes and then interpretation was done basing on the themes identified.

Results
The findings of this study indicate that Parent-Adolescent Communication on Sexual Reproductive Health is present in most of the families. However, this communication is initiated when there is a problem and it is characterized by warnings and threats. The study further revealed that knowledge of the parents on sexual reproductive health, culture, level of education of parents and parent-adolescent relationship influences this communication.

Conclusions and Recommendations
It was suggested by the participants that parents should be given an opportunity to improve their knowledge and skills on sexual reproductive health so that they should be communicating effectively to their children. In principle, effective and accurate information on sexual reproductive health act as a protective factor to the adolescents from risky sexual behaviours.

Applying TFR2 to model fertility differentials from birth histories in Malawi

W. Ng’ambi; J. Kaphuka; J. Chintsanya

Introduction
Birth histories have been collected in numerous countries and freely available to researchers. Despite their wide availability, these data remain under-exploited possibly because their use is complex thereby affecting comprehensive monitoring and evaluation of family planning programmes. Therefore, in this paper, we apply tfr2 to calculate fertility measures from birth history data.

Methods
tfr2 is a stata module to analyze birth histories from demographic and health survey (DHS) datasets. This program calculates the TFR for the last three years preceding the survey year by default although it can be triggered to calculate for even 20 years. We used the 2004 Malawi DHS dataset in the analysis to estimate TFR, mean age at childbearing (mac) and the determinants of fertility levels and trends.

Results
The overall TFR was 6.0(95%CI:5.9-6.2); 4.2(95%CI:3.9-4.6) for urban and 6.4(95%CI:6.26-6.6) for rural population. The mac was 28.8(95%CI:28.5-29.0) with no significant difference between rural and urban residents. The TFR was 5.7 in 2003, 5.3 in 2002 and 6.4 in 2001. Women with at least secondary school were about 25 to 61 times less likely to have higher fertility rates than those with primary or no education(p-value <0.001). Being in the 4th and 5th wealth
Factors associated with place of delivery for women in Malawi

Hlungumazi M. Ngwira Tsirizani M. Kaombe

Introduction

Understanding the socio-economic and Demographic factors that influence the choice of place of delivery amongst women of the reproductive age in Malawi is very crucial in reducing complications that arise during delivery. This study aimed at identifying these factors using statistical models.

Methods

This was done by fitting a Binary Logistic Regression to the 2010 Malawi Demographic and Health Survey for women aged between 15 and 49 years. The statistical analysis was done using SPSS version 16 and STATA version 10, and all tests were done at 5% significance level.

Results

The results using odds ratios showed that family wealth status, mother's education level, region, residential area, and mother's age were statistically significant predictors for place of delivery.

For instance, poorer women were 1.6 (95% CI=1.07, 2.43) times more likely to deliver at health facility than the poorest, middle-income women were 1.4 (95% CI=1.00, 2.10) times more likely than the poorest, richer women were 2.1 (95% CI=1.36, 3.17) times more likely than the poorest, while richest women were 2.7 (95% CI=1.65, 4.54) times more likely than the poorest. Also, women with primary education were 1.8 (95%CI=1.23, 2.52) times more likely to deliver at health facility than those with no education, those with secondary education were 4.0 (95%CI=2.23, 7.09) times more likely than those with no education, while those with higher education were 5.3 (95% CI=0.64, 44.11) times more likely than those with no education.

Further, women in central region were 0.7 (95%CI=0.64, 0.89) times more likely to deliver at health facility than those in the northern region, while women in the South were 0.8 (95%CI=0.69, 0.93) times more likely than those in the north. In addition, women in urban areas were 0.6 (95%CI=0.78, 0.92) times more likely to deliver at health facility than those in rural areas. Furthermore, older women were 0.8 (95% CI =0.78, 0.92) times more likely to deliver at healthy facility than younger women.

Conclusions and Recommendations

The findings implied that family wealth status, mother's education level, region, residential area, and mother's age should be considered in safe motherhood campaign strategies.

First do no harm: illicit financial flows and child mortality in sub Saharan Africa

B, O'Hare; I. Makuta; N, Bar-Zeev, L, Chiwaula; A, Cobham

Introduction

Poor economic development reduces child survival. One of the main constraints to development and therefore child survival in Sub Saharan Africa is shortage of capital (development finance), yet more than $930 billion left the continent over the last 40 years as illicit financial flows (IFF). This paper aims to illustrate the scale of the opportunity cost of IFF in terms delay in time to reach Millennium Development Goal number 4 (MDG4) (reducing child mortality by two-thirds by 2015) in Sub Saharan Africa (SSA).

Methods

The study used continuous decrementing formula to estimate the number of years it would take to reach MDG4 on child mortality (CM) under two scenarios; first under the actual rates of decline in CM and secondly under expected rates of decline of CM if IFF did not occur.

Results

In the 34 SSA countries for which data on illicit financial flows is available, less than one-fifth (5 countries) will achieve their MDG 4 target at the current (actual) rates of decline. In the absence of IFF, almost one half of these 34 countries (15 countries) would reach their MDG 4 target by 2015.

Conclusions and Recommendations

IFF is an impediment to the fight against child mortality as it drains resources for the latter's rapid reduction. It unnecessarily elongates the period and thus costs lives. Post-2015 development agenda must focus on reducing IFF, through greater international financial transparency, to make funds available for reducing U5M and achieving other development goals.

Are there inequalities in community-based interventions for maternal health? The case study of women groups in Mchinji district Malawi

C.O.F. Zamawe , A.L.N. Dube

Introduction

Progress towards Millennium Development Goals has been highly uneven. Lower socioeconomic groups lag behind their more fortunate compatriots for most MDGs. In particular, inequalities in maternal and child health are huge. To make things worse, effective medical interventions are known but rarely reach those who are extremely affected – the poor. Community-based interventions for maternal and child health are for the community by the community. Unlike
medical interventions, little is known about how these community-initiated interventions spread across groups. The objective was to understand inequalities that exist in attendance or participation in community initiated maternal and child health interventions, which are thought to be pro poor.

Methods
We conducted a qualitative study using focus group discussions (FGDs) and in-depth interviews (IDIs). 18 FGDs and 9 key informant interviews were conducted involving women aged 15 to 49 years, women group facilitators and community and family decision makers.

Results
We found age, economic and education disparities in women group attendance. Men influence their wife’s attendance at women groups; we also found that women who formed the groups block new and young women from joining the groups and that the contents being discussed are not suitable for young women and for a meeting that is attended by a mother and a daughter who is also married.

Conclusions and Recommendations
Inequalities exist even in community initiated health interventions. Like medical interventions, most affected women are extremely side-lined across all categories; although these inequalities are not skewed; the poor still lose a lot. Massive community awareness campaigns on maternal and child health need to accompany all community interventions; men’s involvement is paramount to the success of any locally initiated intervention and there is a need to promote ownership of the community interventions.

Do women’s desires for children and use of family planning have an impact on fertility?
A Dasgupta, A Price, A Dube, A Crampin, J Cleland, A Baschieri, B Zaba

Introduction
Understanding the relationship between fertility intentions and fertility is important, as it reveals whether women achieve their fertility desires. Few studies have gathered information on intention before the birth of a child. Dube (2012) found that fertility intentions did not seem to translate into family planning (FP) use. We take the analysis one step further, and look at the impact of fertility intentions and FP-use on fertility.

Methods
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Results
Unsurprisingly, women who want no more children or want to wait at least 2 years, have lower fertility than women who want a child within 2 years. However, there remain a large number of women who want no more children, but nevertheless go on to have a child. Women who use no FP have higher fertility than women using modern-methods. However, some FP-users still contribute births. These women may be reporting they use FP, but are not using it consistently.

Conclusions and Recommendations
It is worrying that many women who do not wish to become pregnant nevertheless go on to have a child. Perhaps these women are not able to translate their intentions into action in order to control their fertility. This calls for improved FP-provision to facilitate women to use services.

A Retrospective study on the trends in neonatal mortality at Queen Elizabeth Central Hospital from 2008 to 2012.
E. Chirwa, T. Mbvundula and T. Mussa

Introduction
In Malawi, information on progress made by specific health facilities in reducing neonatal mortality is scarce yet urgently needed.

Methods
For this reason a retrospective hospital records review was conducted at QECH, a tertiary referral hospital in the Southern region of Malawi, to determine trends in neonatal and perinatal mortality rates over the past five years (2008-2012). The results obtained maybe used as a benchmark for care.

Results
It was found that neonatal mortality rates have been unsteady with the highest rate in 2009 (70.36 per 1000 live births) followed by a decline to 52.94 in 2011. The rates increased to 56.77 in 2012. A similar trend was seen in perinatal mortality rates, 114.78 in 2009, 108.75 in 2010, 92.09 in 2011 and 96.54 in 2012. Early neonatal deaths comprised the greater proportion of both neonatal and perinatal deaths. Weight specific fatality rates remained relatively constant. Almost all babies weighing less than 1000g died (91.6% on average). The higher the birth weight the lower the fatality rates. Surgical cases had the highest fatality rates in most years, followed by birth asphyxia, prematurity, infections and respiratory distress. From 2011 to 2012, case fatality rates for birth asphyxia and prematurity decreased whilst those for the rest increased.

Conclusions and Recommendations
These results show that reducing early neonatal deaths would contribute to a reduction in perinatal and neonatal mortality rates. This would require the obstetric team to work together with the pediatric team. QECH should also channel resources to babies with weights greater than 1000g. Finally, there is need to look into possible interventions to address diagnosis-specific fatality rates.

Trends in maternal mortality in Malawi: 1977 to
2012
Tim Colbourn, Sonia Lewycka, Bejoy Nambiar, Iqbal Anwar, Ann Phoya, Chisale Mhango.

Introduction

Millennium Development Goal 5 (MDG 5) targets a 75% reduction in maternal mortality from 1990 to 2015, yet accurate information on trends in maternal mortality and what drives them is sparse.

Methods

We reviewed literature for population-based studies that provide estimates of the maternal mortality ratio (MMR) in Malawi, and for studies that list and justify variables potentially associated with trends in MMR. We used all population-based estimates of MMR representative of the whole of Malawi to construct a best-fit trend-line for the range of years with available data; calculated the proportion attributable to HIV, and qualitatively analysed trends and evidence related to other covariates to logically assess likely candidate drivers of the observed trend in MMR.

Results

Fourteen suitable estimates of MMR were found, covering the years 1977-2010. The resulting best-fit line predicted MMR in Malawi to have increased from around 350 maternal deaths per 100,000 livebirths in 1980, to 700 in 1990, before peaking at around 1000 in 2000, and falling to around 850 in 2005 and below 500 in 2010. Concurrent deteriorations in HIV and health system investment and provision are the most plausible explanations for the trend. Female literacy, education, family planning, and poverty reduction could play more of a role if thresholds are passed in coming years.

Conclusions and Recommendations

The decrease in MMR in Malawi is encouraging as it appears recent efforts to control HIV and improve the health system are bearing fruit. Sustained efforts to prevent and treat maternal complications are required if Malawi is to attain the MDG 5 target and save the lives of more of its mothers in years to come.

Promotion of male involvement in improving families’ reproductive health through sociolegal frameworks in Malawi: Are men aware?
C.O.F Zamawe; A.L. Dube; G. Masache; G. Wasiri; F. Njuwaluwa ; B. Nambiar ; T. Shand

Introduction

Reproductive health implies that people are able to have a responsible, satisfying and safe sex life with the capacity of reproduce and make choices freely. It is against this understanding that governments and its development partners provide social and legal framework that supports families and individuals lead satisfying reproductive lives. However, little is known whether individuals are aware of these frameworks. We carried out an assessment to determine peoples’ levels of knowledge of socio-legal frameworks that support satisfying reproductive health lives.

Methods

Our study is a national cross-sectional study involving 1000 men aged 18 years and above. Men were asked questions covering a variety of topics on gender equality, parenting, sexual and reproductive health services and legislation on gender equality.

Results

Around 90% of men did not provide any support to their wives during the birth of their last child and over half of the respondents said that family planning is the responsibility of their wives. Although around 82% of men are aware of the maternity leave policy, only less than 10% know about the paternity leave and most of them (over half) don’t agree that this policy should be guaranteed by law.

Conclusions and Recommendations

Despite formulation of policies to promote men engagement in reproductive health, their involvement is still minimal and most of them are not aware of the said policies. There is a need for a bottom up approach in policy formulation and we recommend community awareness campaigns for existing policies.

Prevalence rate of Chikungunya virus infection in patients presenting with simple malarial symptoms but have a negative malaria test, a case study of Matawale health centre.
D. Nkosi, M. Mtefe and D. Pemba

Introduction

Acute febrile illnesses comprise the majority the major burden in Malawi health facilities. Fevers in Malawi are usually considered as being caused by malaria and sepsis. Recent studies suggest that a significant proportion of febrile diseases are a result of conditions not frequently considered such as Chikungunya virus an arbovirus.

Methods

After excluding those who had obvious cause to febrile condition and tested negative to malaria using Paracheck pfR rapid test kit. 28 Blood specimen were collected and transported frozen to Chancellor College Vector Borne Disease research Laboratory . QIAamp viral RNA extraction kit was used to extract RNA from serum. RT-PCR was done by using the Titan One-Step RTPCR System. Basing on previous study that picked chikungunya virus from mosquitoes from the area, CHIKV specific primers were used to amplify specific identifying regions of the virus segment. PCR products were electrophoresed using 2 % agarose.

Results

70% of the patients seen tested negative to malaria. CHIKV RNA was detected in 36% of the blood samples. The study established that there was no significant correlation between having malaria parasites and CHIKV infection OR=0.67 (p 0.007).

Conclusions and Recommendations

This study reports of first confirmed human cases of CHIKV in Zomba. Though usually nonfatal, but brings
Comparative diagnosis of Schistosomiasis: A study of Lamusi village, a community around Lake Chilwa
Frank B Nyirongo, J. Nyirongo and D. Pemba

Introduction
Schistosomiasis remains a challenge in Malawi especially in the endemic areas where transmission still remains active. Since laboratory diagnosis remains key in the diagnosis of infected individuals and monitoring of treatment efficacy, evaluating the sensitivity and specificity of laboratory diagnostic methods is crucial in the diagnosis of infection. Recently there has been a new test kit introduced to diagnose urinary Schistosomiasis (ELISA antigen rapid test). Despite vectorborne laboratory at chancellor college carried out to a study to compare the sensitivity and specificity of these diagnostic tools.

Methods
46 subjects were randomly recruited in the study. Urine reagent strip (haematuria), ELISA antigen test and microscopy were used to diagnose the urine samples for bilharzia. Microscopy was treated as a control.

Results
Elisa rapid test had the highest detection (78.3%) positive samples, followed by microscopy which detected 43.5% and urine reagent strip test had 21.7%. Microscopy had the highest sensitivity (90%) but lowest specificity (23%). Urine reagent strip test had the lowest sensitivity (45%) but highest specificity (69%). Bilharzia antigen rapid test had higher sensitivity (80%) as compared to urine reagent strip, and higher specificity (60%) as compared to microscopy test.

Conclusions and Recommendations
Elisa rapid test can be recommended for diagnosing Schistosoma haematobium infection. Urine reagent strip (haematuria) be used only where the other two diagnostics are not present. There is need for further confirmation with polymerase chain reaction (PCR) of all the three methods used in this study to validate the sensitivity and specificity of each method, to check for cross reactivity with other helminths infections.

Innovative solutions to integrating supportive supervision in Malawi health sector
R.L.J. Kachala and G. Banda

Introduction
Malawi’s current clinical and health system supervision is not adequately contributing to strengthening service delivery quality due to systemic inefficiencies including fragmented facility and program performance reporting; outdated 2005 paper-based supervision checklist; and unavailability of specialized healthcare supervision checklist. In response, the MoH formulated an Integrated Supportive Supervision Task Force to pilot a revised clinical and health systems supervision checklist using innovative technology to collect, aggregate, disaggregate, integrate and analyze performance data from multiple vertical health programs to provide instant feedback at the time of health facility supervision with support from USAID through SSDI-Systems. Does an integrated supportive supervision model which uses smartphones to collect and analyze performance data improve the quality of clinical and health systems supervision?

Methods
The integrated supportive supervision intervention is being piloted in seven health facilities located in three districts in Malawi between April and September of 2013. Both internal and external supervisors were trained on an integrated supervision checklist, with automated analysis indicators linked to the HMIS framework using principles of Open Data Kit software collection onto 20 smartphones.

Results
- The participatory approach by vertical disease programs to reviewing the checklist unifies institutionalization and ownership.
- The electronic checklist improves supportive supervision data quality and consistency
- Health facilities appreciate having immediate feedback and the ability to visualize their performance data outright for quality improvement and decision making

Conclusions and Recommendations
- Facility managers and directors at the national level can download and use the supervision data for planning and policymaking. Specified MoH staff can receive prompts and alerts on critical problems as soon as the supervision data is submitted to the online database.
- Need to formulate specialized healthcare performance indicators
- Proposition to harmonize the innovative supportive supervision system with DHIS 2.

Prevalence of urinary Schistosomiasis in the cane farms of Dwangwa; A case study of farms under Dwangwa Cane Growers Limited(DCGL)
Lungu P

Abstract
Schistosomiasis the commonly termed Bilhaaxia is the disease caused by the parasite trematodes of the genus Schistosoma that affects men and other livestock. It is the serious socio-economic and public health problem in many tropical and subtropical areas. This study was conducted with the aim of investigating the prevalence of Schistosomiasis in cane farms of Dwangwa, and to ascertain the risk levels of workers to Schistosomiasis in the study area. The study was carried out by collecting urine from the randomly sampled workers on the farms that are under DCGL in Dwangwa, Nkhotakota District, namely Center, Kasitu and Liwaladzi. Each urine specimen collected was examined for both haematuria and ova microscopically. Inspection for the presence of snails in the farms was also done, and those found were taken to laboratory for shedding. A questionnaire was also administered to assess the level of knowledge of the participants on Schistosomiasis. At the end it was established that Center farm was more prevalent...
with prevalence of 28.57%, then Liwaladzi 19.23%, least being 7.69% for Kasitu. In respect to occupation Cane guards and Capitaos were highly infected (33.3%) followed by Estate General (21.66%). In respect to age, 21 – 30 age group had 55% infection rate, 31 – 40 years had 21.25%, 41 – 50 years exhibited 11.25%, 16 – 20 age range had 6.25%, descending to 51 – 60 age group that had 5% and the least were those over 60 years of age with infection rate of 1.25%. In respect to gender, males were highly infected than females in all the three farms. Questionnaire results proved that a good number of the participants had basic knowledge on Schistosomiasis. This is a wake-up call to the authorities of DCGL to start enforcing proper management with the realization that Schistosoma haematobium is present among their workers; thus in their farms.

Successful health initiatives in Malawi - and their consequences for ventilation in critical care
Pollach G; Jung K

Introduction
Improvement of antiretroviral therapy, maternal services in the districts and our emergency services leads to severely ill, but salvageable, patients suddenly reaching our ventilation units. The identification of inherent challenges is mandatory.

Method
The presented material is based on the authors responsibility for ventilation and intensive care in the largest hospital in Malawi and discussions with around 85% of all consultants responsible for ventilation in Malawi (2006-2013).

Results
Four complexes contain challenges for ventilation in Malawi:

Sepsis complex
1 High numbers of sepsis patients with additional HIV or Tb infection.
2 High numbers of postoperative newborns.
3 Challenges through a different functional residual capacity in Africa

Resource complex
1 Triage: 12 ventilation beds have to serve the whole country.
2 Ventilation equipment & consumables have to be available continuously for all age groups
3 We depend on private purchases to provide ventilators for the 12 beds

Administration complex:
1 Inconsistent supply with drugs for sedation and analgesia.
2 Procurement and maintenance of ventilators is an unsolved panacea.
3 ICU nurses are constantly rotated out of ICU-wasting experience

Intensive care complex:
1 Anaestetic clinical officers are more vulnerable to hierarchical/economic threats than physicians in other departments.
2 Intensive Care is sidelined by public health funding streams – but has to deal with their successes.
3 Ventilation is dangerous – still qualified staff is in management and not in the unit.

Conclusion
Successful health strategies lead to a rising necessity for ventilation in Malawi. We describe for the first time the inherent challenges.

Recommendations
Decision makers should design a strategy to deal with the findings to secure the benefits of modern medicine for Malawian.