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Anthropological and bioethics study of clinical research in Malawi

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Objectives

This study was aimed at understanding cultural attitudes, beliefs and perceptions to biomedical research, community consultation and informed consent process in peri-urban and rural settings in Malawi. It attempted to provide a base for informing, reforming and improving informed consent policy and practice by describing the local cultural attitudes and perceptions to research, autonomy, informed consent process and community consultation. It also assessed the validity of the Western concepts of informed consent and autonomy in a Malawian (African) setting.

Methods

The study employed both qualitative and quantitative research methods. Data were obtained from research participants during focus groups and individual interviews. 50 FGDs were conducted with 494 research participants. Individual interviews were conducted with 319 participants drawn from 5 different clinical trials in Lilongwe and Blantyre. The data were analyzed both manually and electronically.

Results

A majority of research participants described biomedical research as activities associated with preventive health measures such as community assessment and health education. This was common among the refusers and non-participants. Most research participants could differentiate between biomedical research and standard health care; but the difference was seen in the quality of care, rather than procedures involved. Among the category of participants, the need to receive better medical treatment was said to be their motivating factor to participate in biomedical research. 94.6% (298) of clinical research participants said they understood the study objectives, but only 21.8% (65) were able to state them correctly. 92% (294) of participants understood the informed consent procedure and its meaning. 33% (97) of those who perceived benefits of participation mentioned the care provided to them in clinical research as one of the benefits. 16.6% (52) acknowledged existence of risks to their participation in the clinical research; and were able to name the risks involved While 98% (313) said they joined clinical research freely, only 92% (294) understood the informed consent procedures. 90.9% (290) informed their partners/relatives about study participation; rather than seeking permission, 64.4% (187) said they did so “to let them know what was happening.” 84.6% (270) had no problem with allowing their samples to be stored for future research.

Conclusion

People who refuse to take part in biomedical research do so with an impaired understanding of its meaning and objectives due to rumors associated with biomedical research. There is a knowledge gap between real and perceived objectives among those who participated or were participating in biomedical research. People are motivated to take part in biomedical research by the “quality of care” provided to research participants. Participants understand their voluntary participation in research and understand the informed consent procedures; with community consultation seen as customary and preceding individual consent. People accept to participate in clinical research with knowledge of the existence of risks to their participation. Preference of signing or thumb printing is contrary to the Western concepts which allude to oral consent to be sought in illiterate communities. Communities have a good attitude towards biomedical research but are put off by researchers who

- do not follow customary procedures like community consultation and
- do not give feedback of results after the research is over.

Recommendations

Researchers should state objectives in simple terms and should remind participants about the objectives throughout the study. Researchers should clearly explain why each procedure is being done or why materials are being given to participants in biomedical research. Researchers have social obligations to provide services to communities where they recruit participants. Researchers have to engage communities before initiating biomedical research in communities or health centres; community engagement would help to dispel rumors associated with clinical research and would encourage community members to participate.

Rotavirus gastroenteritis in children in Blantyre, Malawi

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Introduction

Gastroenteritis due to rotavirus infection is responsible for over half a million childhood deaths each year. Two rotavirus vaccines are currently being evaluated

in countries in Africa and Asia, where the vast majority of rotavirus-related deaths occur. In order to help inform and assess rotavirus vaccination programmes, long-term studies addressing the epidemiology of rotavirus infections are needed.

Methods

Children under age 5 years who attended, or who were admitted to, the Queen Elizabeth Central Hospital with acute gastroenteritis were eligible for inclusion in the study. A faecal specimen was obtained from each child. Rotavirus was detected by ELISA. Rotavirus genotyping was done using RT-PCR.

Results

A total of 3,779 children with acute gastroenteritis were enrolled between 1997 and 2007. Rotavirus was detected in one-third of children. Three-quarters of all rotavirus infections were identified in children under one year of age, and 28% of rotavirus infections occurred in infants aged less than 6 months. Rotavirus circulated year-round. Overall, the globally most common P[8],G1 rotavirus strain accounted for the largest proportion (38%) of strain types identified during the period of study. However, globally uncommon strains including P[6],G8; P[4],G8; and P[6],G1 were commonly identified in Blantyre. During the latter part of the surveillance study, reassortant rotaviruses including the P[8],G8 strain type were recognized, and the globally emerging serotype G12 was detected for the first time in Blantyre.

Conclusions

Rotavirus vaccines have the potential to substantially reduce the morbidity and mortality associated with diarrhoeal disease among children in Malawi. However, they will need to protect infants at a young age and against a wide range of rotavirus serotypes to be maximally effective.

Conjugate pneumococcal vaccine for the Secondary prevention of invasive pneumococcal disease in HIV-infected adults: double blind randomised placebo controlled trial

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Background

Invasive pneumococcal disease is serious and common in HIV-infected Malawians. Protection by vaccination is desirable. The 23-valent pneumococcal polysaccharide vaccine has been shown to be ineffective in HIV-infected Africans. The newer protein-polysaccharide conjugate vaccines offer an alternative strategy for adults.

Objectives

To measure efficacy of a seven-valent (4, 6B, 9V, 14, 18C, 19F, 23F) pneumococcal conjugate vaccine to protect HIV-infected adults from invasive disease caused by vaccine serotypes.

Methods

A randomised double blind placebo controlled trial. Recruits were identified on the wards of the Queen Elizabeth Central Hospital (QECH) whilst recovering from a proven episode of invasive pneumococcal disease. Thus the trial was a secondary prophylaxis trial. Primary end-point was a further vaccine serotype (including the cross-reactive serotype 6A) invasive pneumococcal disease episode. Secondary end-points included death and all cause pneumonia.

Results

The trial commenced in February 2003, enrolment ceased in May 2007 and follow-up was censored at the end of October 2007. From 1375 invasive pneumococcal events recorded at the QECH during the enrolment period, 496 were enrolled (398 died, 51 declined participation, 83 were ineligible and 347 were not able to be interviewed).

Of the 496 recruits, 437 were known to be HIV positive (2 participants status uncertain). During 798 person years of follow-up there were 67 invasive pneumococcal events diagnosed (all in HIV-infected participants), of which 19 were of vaccine serotype and 5 of serotype 6A. Of these 24 events 19 occurred in the placebo arm and 5 in the vaccine arm – HR 0.24 P<0.01, vaccine efficacy 76%. When adjusted for CD4 count, clinical stage, age, antiretroviral use and co-trimoxazole prophylaxis use, vaccine efficacy is 69% (HR 0.31, p=0.014). There was a tendency to less all cause pneumonia. There was no impact on mortality.

Conclusions

Conjugate vaccines prevent serious pneumococcal disease in HIV-infected adults. The policy implications of these findings now need to be considered.

The characterisation of the loss of B cell memory to pneumococcal protein antigens in Malawian children during HIV infection

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Objectives

To investigate whether naturally acquired immune memory to pneumococcal protein antigens in childhood deteriorates with the progression of HIV infection.

Patients and methods

HIV positive children (clinical stage 1-3) and age-matched non-HIV controls were recruited from the QECH paediatric staging and surgery clinic respectively, following informed consent (COMREC no. P.11/07/591). B-cell subsets (CD19, CD27, CD38, CD10) were comprehensively phenotyped by flow Cytometry. Peripheral blood mononuclear cells were stimulated polyclonally with pokeweed mitogen, pansorbin & CpG DNA, and immune memory to pneumococcal protein antigen (CbpA) assessed by cultured B-cell ELISpot assay. Comparisons between groups were performed using Mann-Whitney test. Nasopharyngeal swabs were also collected to detect coincident pneumococcal colonisation.

Results

40 HIV positive and 30 age-matched non-HIV controls were recruited. There was no significant difference in either the total B-cell or memory B-cell populations between control and HIV infected children. Pneumococcal CbpA specific memory B-cell counts were lower in HIV infected patients (median 7.5, range 0-78) than in controls (median 16.7, range 2.5-95) ($p < 0.05$). There was no evidence for a trend with CD4 count.

Conclusions and recommendations

These data suggest that although the overall B-cell populations remained stable, there is a small but significant loss of immune memory to the pneumococcal protein CbpA in paediatric HIV infection. A longitudinal study is underway which will determine whether ART reverses this antigen-specific immunodeficiency.

Risk factors for nevirapine hypersensitivity in Malawi

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Objectives

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

Setting

Antiretroviral clinic, Queen Elizabeth Central Hospital

Materials and methods

We prospectively recruited 800 antiretroviral naive patients commencing Triomune and followed these individuals for 26 weeks from March 2007 to September 2008. We monitored clinical and laboratory parameters including CD4 and Liver function tests as well as Body Mass Index (BMI). Careful clinical assessment of all patients defined the HSR phenotype with severe rash or jaundice requiring treatment interruption.

Results

800 patients were recruited. Forty one individuals (5%) developed HSR. Of these, 27 (65%) had Maculo-papular skin eruption; 5 (10%) had Steven Johnson syndrome; 2 (5%) had toxic epidermal necrolysis and 8 (20%) developed jaundice. 24 individuals had the adaptive phenomenon where rash or abnormal liver tests developed but recovered before hypersensitivity developed.

There was no significant independent risk factor for developing hypersensitivity although there were suggestive trends in Men with CD4 counts greater than 400 and Women with CD4 counts greater than 250. Body mass index less than 18.5 and increasing age also predicted hypersensitivity. Blood levels of nevirapine were elevated in a proportion of individuals who subsequently developed hypersensitivity.

Overall there were 78 deaths in the cohort. One was due to nevirapine hepatotoxicity whilst the rest were due to opportunistic infections. Low Body mass index (< 18.5) was predictive of death although neither CD4 count nor WHO staging correlated with death

Conclusions and recommendations

High CD4 count > 250 and female gender are known risk factors for nevirapine HSR. In our cohort low BMI was predictive of death and there was a trend although not significant for male gender and higher CD4 counts at initiation of therapy as independent risk factors for developing hypersensitivity. Several

individuals showed adaptation to nevirapine. Accurate clinical or laboratory biomarkers of nevirapine hypersensitivity need to be identified.

Effect of maternal HAART on postnatal HIV transmission after cessation of extended infant antiretroviral prophylaxis

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Background

The PEPI-Malawi trial showed that infant daily antiretroviral prophylaxis from birth to 14 weeks can reduce breastfeeding associated HIV transmission by 65%. Maternal highly active antiretroviral therapy (HAART) is a possible intervention for prevention of postnatal HIV transmission.

Objective

To assess postnatal HIV transmission and its association with maternal HAART after extended infant prophylaxis for 14 weeks.

Methods

Breastfeeding HIV-uninfected infants were randomized at birth to receive receive: 1) single-dose NVP plus 1 wk AZT (control) or 2) control plus extended NVP daily to age 14 weeks or; 3) control plus extended NVP+AZT daily to age 14 weeks. Maternal CD4 cell count was obtained at delivery, 14 weeks and 6, 12, 18, 24 mos. Maternal CD4 cell count exposure categories were: HAART-eligible-untreated (CD4 < 250 , no HAART), HAART-eligible-treated (CD4 < 250 , received HAART), and HAART-ineligible (CD4 ≥ 250). Incident HIV infection after cessation of prophylaxis by maternal HAART category and hazard ratios from proportional hazards models were calculated.

Results

Of 2318 HIV-uninfected infants at 14 weeks, 130 (5.6%) acquired HIV infection during follow up; 323 mothers (13.9%) received HAART. The rate (95% CI) of HIV transmission per 100 p-ys was: HAART-eligible-untreated=10.5 (7.86-13.79); HAART-eligible-treated=2.1 (0.76-4.53); and HAART-ineligible=3.7 (2.86-4.61). The infant prophylaxis adjusted rate ratios (95% CI) for HAART-eligible-treated and HAART-ineligible versus HAART-eligible-untreated were 0.21 (0.09-0.48) and 0.35 (0.25-0.50), respectively.

Conclusion

Breastfeeding HAART-eligible women should start treatment early for their own health and to reduce postnatal HIV transmission to their infants. Whether maternal HAART or continuation of infant prophylaxis can safely be recommended for HAART-ineligible women remains unknown

Molecular characterisation of invasive multidrug resistant nontyphoid salmonella enterica serovar typhimurium from Malawi

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Objectives

To investigate the molecular basis of the epidemic of multidrug resistant (MDR) nontyphoid Salmonella enterica serovar Typhimurium causing bacteraemia in children and HIV infected adults.

Setting

Malawi-Liverpool-Wellcome Trust Clinical Research Programme, College of Medicine, Queen Elizabeth Central Hospital (QECH) and Wellcome Trust Sanger Institute, Cambridge.

Materials and methods

A typical invasive MDR isolate was sequenced. 30 invasive isolates from patients admitted to QECH, Blantyre between 1997 and 2006 were characterised by pulse field gel electrophoresis (PFGE), antimicrobial susceptibility testing and plasmid purification. PCR for prophage, antibiotic resistance genes aadA1 (aminoglycoside), dhfrI (trimethoprim), cat (chloramphenicol acetyl transferase),

blaT (beta-lactamase) and qacE (quaternary ammonium compounds) gene was performed on all isolates. Transferability of antibiotic resistance was tested through conjugation.

Results

Sequencing revealed presence of a large virulence plasmid with antibiotic resistance genes. Each isolate was resistant to at least one antibiotic. Prophage repertoire, PFGE and plasmid profiles changed around 2002 coinciding with increased MDR post-2002. Resistance genes *aadA1*, *dhfrI*, *blaT* and *qacE* were detected by PCR in each of the 30 isolates. Chloramphenicol resistance gene however was identified only in isolates from 2002 onwards. Antibiotic resistance was transferred successfully to an *E. coli* recipient.

Conclusions and recommendations

MDR phenotype is encoded on a large self transferable virulence plasmid. The genetic shift in plasmid, PFGE and prophage profiles suggests that clonal replacement occurred around 2002. Intermixing of surveillance the array of prophage elements could form a PCR based typing scheme distinguishing epidemic and field isolates.

Early mortality in adults treated for pulmonary tuberculosis in Blantyre, Malawi

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Background

Unacceptably high mortality rates in patients treated for pulmonary tuberculosis are well recognized. In Malawi, previous studies have demonstrated a 20% mortality during tuberculosis treatment, with two thirds of deaths occurring within the first two months. The reasons for this high early mortality are poorly understood.

Objective

To determine the factors responsible for early clinical deterioration or death during the intensive phase of tuberculosis treatment.

Methods

ARV naïve individuals commencing the intensive phase of treatment for a first episode of pulmonary tuberculosis (smear positive or smear negative) at Queen Elizabeth Central Hospital, Blantyre were actively followed-up on days 3, 7, 28 and 56 following the start of treatment. Patients were also advised to self-present to the study team at any time should they become unwell (an 'acute episode'). CD4 count and CXR were performed pre-TB treatment. At each visit, a detailed clinical and laboratory assessment was undertaken. Acute episodes were investigated and managed as clinically indicated.

Results

150 patients (57% males, median age 30, 59% sputum smear positive, 71% HIV positive with median CD4 count 218) have completed the 2 month study period. Of these, 14 (9.3%) presented with an acute episode while 11 patients (7.3%) died. About 90% of acute episodes and 52% of deaths occurred during the first month of tuberculosis treatment. Acute episodes most commonly resulted from presumed bacterial pneumonia. All but one patient, who developed aplastic anaemia, recovered with appropriate treatment. There were no significant differences between the patients who died, had acute episodes or survived in terms of age, sex, HIV status, sputum smear status and baseline clinical observations. The CD4 count tended to be lower in those patients who died.

Conclusion

Superadded presumed bacterial pneumonia is the most common reason for early deterioration following the introduction of tuberculosis treatment in Malawi. This has occurred despite the widespread use of cotrimoxazole prophylaxis (83% of patients were on co-trimoxazole at enrollment). The early death rate in this cohort was lower than anticipated (7.3% rather than 12%) which suggests that with prompt early intervention following clinical deterioration, a proportion of deaths may be prevented.

Pericardial effusions in children with severe protein energy malnutrition resolve with therapeutic feeding: a prospective cohort study

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Objectives

Sub-Saharan Africa has the highest rates of childhood malnutrition in the world. In malnutrition it is essential to look for co-morbidities which could affect management and outcome. For some clinicians the presence of a pericardial effusion (PE) suggests TB infection. This study was designed to look at the association of pericardial effusion in malnourished children with HIV status, TB

diagnosis, and type of malnutrition.

Materials and Methods

This is a prospective study of malnourished children admitted to the malnutrition unit at Queen Elizabeth Central Hospital, Malawi. Children had an echocardiogram on admission and at four weeks post discharge.

Results

Of 89 children enrolled 85 had a measurable PE on admission; 45 were moderate, 8 severe. Twenty eight were marasmic (8 also had TB), 29 had marasmic-kwashiorkor (6 with TB), and 32 had kwashiorkor (4 with TB). The overall reduction in PE size after four weeks of nutritional therapy was significant (2.9mm change, range 0 -8.4mm, $p=0.002$). The reduction in size of PE was proportional to the extent of peripheral oedema on admission (2.7mm v 1.0mm, $p=0.017$).

Conclusions

In severely malnourished children pericardial effusions are common, and respond to nutritional therapy alone.

Cross-sectional studies to describe laboratory normal reference ranges in healthy and HIV-infected adults in Blantyre, Malawi

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Objectives

To determine (reference ranges for the various laboratory parameters among Malawian adults for both HIV-uninfected and HIV-infected individuals.

Materials and methods

These were serial cross-sectional observational studies of adults aged 18 to 50 years of age in which blood was collected and analyzed at one time point. 210 and 244 adults were enrolled in the first and second Norms studies, respectively. In Norms1, 137 (65.2%) were HIV-1 uninfected and 73 (32.8%) were HIV-1 infected; while in Norms2 164 (67.2%) were HIV-1 uninfected and 80 (32.8%) were HIV-1 infected. Samples were tested for the following parameters: full blood count with five part differentials and platelets, prothrombin time, partial thromboplastin time, and international normalized ratio, electrolytes, chemistries, renal function tests, liver function tests, and CD4+/- CD8+ count.

Results

The 2.5th and the 97.5th percentile were used to derive the reference ranges for both the HIV-uninfected and the HIV-infected individuals. The results from the HIV-uninfected and HIV-infected individuals were then compared using the Wilcoxon rank-sum (Mann-Whitney) test.

Conclusions and recommendations

Through these studies, laboratory normal reference ranges were established in healthy Malawian adults. In addition, ranges for those individuals who are HIV infected have been calculated. A comparison of the laboratory results for the HIV-uninfected and HIV-infected individuals shows a statistically significant difference (p -value <0.0001) can be seen for some analytes, including albumin, total protein, RBC, hemoglobin, and Hematocrit. These new reference ranges should be made available for use by all care providers in Malawi.

Maternal genetic polymorphisms (MGPs) and pregnancy outcomes in placental malaria (PM)

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Objectives

(1) To assess the association between three MGPs and PM; (2) to investigate if the association between PM and increased risk of low birth weight (LBW) is modified by MGPs of methylenetetrahydrofolate reductase (MTHFR), Glucose-6-phosphate dehydrogenase (G6PD) and sickle haemoglobin (HbS).

Materials and methods

A total of 364 singleton pregnant mothers from Montfort Hospital in Chikwawa District, S. Malawi (between Jan - July 2005) were recruited and the babies they delivered were classified as preterm, and appropriate for gestational age. From the 364 subjects, 112 were positive for PM and an equivalent number of negatives (112) served as controls. The controls were serially selected at random from odd numbers of the remaining subjects. Placental histology was classified according to Bulmer's classification of active, chronic, past and no infection. The genomic DNAs were extracted from 200µl of whole blood samples by the QIAMP® Kit, amplified by polymerase chain reaction and analysed by restriction enzymes.

Results

Out of the 364 births, (84)23.1% were preterm while (280)76.9 % were term births. (28)7.7 % had LBW and (336)92.3 % had normal birth weight; (112)30.8 % had PM infection and (252)69.2 % had no infection. (74)66.1 % had active infection and (38)33.9 % had past infection. The HbS variants were significantly associated with preterm birth ($p=0.04$) and PM infection was significantly associated with LBW ($p=0.007$).

Conclusions and recommendations

The C677T variant for MTHFR was significantly a higher risk factor for LBW in PM (OR, 3.3; $p=0.04$); sickle cell disease is a risk factor for preterm birth; PM infection is a risk factor for LBW and that MTHFR low activity C677T variant is a risk factor for LBW in PM in the Malawian women sampled.

Impact of intermittent preventive treatment in infants (IPTi) on malaria morbidity: evidence from observational data in salima and Lilongwe, Malawi.

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Introduction

A number of studies have shown that, under clinical trial settings, intermittent preventive treatment of malaria in infants (IPTi) is an efficacious intervention with great potential to reduce malaria morbidity. However, the impact of the intervention under program conditions remains unclear.

Objective

To assess the impact of intermittent preventive treatment of malaria in infants on malaria episodes under routine settings.

Study methods

True and balanced health facility based panel data was collected from two intervention districts (Lilongwe and Salima) and a control district (Kasungu). In all districts data was available for 24 months; 12 months before and 12 months after the intervention for intervention districts. The difference-in-differences model (DiD) was used to estimate the treatment effect of IPTi. DiD is a simple but powerful tool in estimating treatment effects of non experimental data.

Results

There was a 2% decline in malaria episodes during the period of study in the control district. However, IPTi reduced infant malaria episodes by 2% to 8 % more in the intervention districts compared to control district. Under low ITN coverage (<30%) this reduction was 8 % compared to 2 % under high ITN coverage (>50%).

The incremental IPTi cost per malaria episode averted was 10 US\$ for Salima and 1 US\$ for Lilongwe district.

Conclusion

- IPTi has minimal to modest effect under routine conditions and this effect varies greatly depending, among other factors, on concurrent coverage level of other preventive malaria control interventions for infants such as ITNs and,
- IPTi is cost effective compared to other malaria control interventions for infants.

Recommendations

IPTi should be considered one of the tools for malaria control for infants in the country.

Innovative approaches to improve programmatic effectiveness and efficiency of IPTi are needed.

Is cerebral malaria a risk factor for epilepsy? Findings from the Blantyre Malaria Project Epilepsy Study

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Objectives

To determine whether child survivors of cerebral malaria (CM) are at increased risk of developing epilepsy after recovery.

Study methods

We conducted a prospective, exposure control study of retinopathy-confirmed CM survivors age-matched to concurrently admitted children without coma-related illness. Children with a history of previous unprovoked seizure were not eligible. Acute clinical data including electroencephalographs (EEGs) were

reviewed to assess for clinical factors predicting adverse outcome after CM. Follow-up assessments, including seizure and developmental screens, were completed quarterly.

Results

From March 2005-June 2008, 128 CM survivors and 226 controls were enrolled (average age 38.8 months; 58.7% male) and have been followed for a mean 13.3 months (IQR 0.9-10.6). Among CM survivors, 7.0% have developed epilepsy, meaning recurrent, unprovoked seizures, compared to zero in the control group ($p=0.0006$). CM survivors also subsequently suffer from higher rates of developmental delay (21.1% vs. 1.8%; $p<0.0001$) and behavioral problems including attention deficit hyperactive disorder (7.0% vs. 0; $p=0.0006$). The overall incidence of any adverse neuropsychiatric outcome during follow-up was 32.0% among CM survivors compared to 1.8% in the control group ($p<0.0001$). The only identifiable predictor of adverse outcome among CM survivors was seizure(s) during the acute infection. Subclinical seizures evident only on EEG were common.

Conclusion

Adverse neuropsychiatric sequelae, including epilepsy and behavioral disorders, are common among pediatric CM survivors.

Recommendations

Pediatric CM survivors may benefit from long-term follow-up to identify and treat subsequent neuropsychiatric conditions. Clinical trials of neuroprotective agents, particularly antiseizure medications, during acute CM are needed.

Surveillance to confirm the disappearance of chloroquine resistant malaria following chloroquine withdrawal in Malawi

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Objectives

To learn how far chloroquine sensitive falciparum malaria extends beyond Blantyre, we expanded surveillance to other districts.

Settings

Drug efficacy studies conducted, by National Malaria Control Program, in Lilongwe, Machinga, and Nkhosak districts.

Materials and methods

Filter paper blood samples were collected in the drug efficacy studies conducted in Lilongwe, Machinga, and Nkhosak. Genotyping was done by allele specific restriction analysis of PCR-amplified parasite DNA.

Results

Five hundred and seventeen pretreatment blood samples were collected (Lilongwe N=208, Machinga N=156 and Nkhosak N=152). Samples were analyzed for PfCRT K76T and mutations in DHFR codons 59 and 164 and DHPS codon 540. A randomly selected subset of 50 samples was analyzed for mutations at the DHPS 437 and DHFR 51 and 108 codons. K76T genotyping was completed for 476 of 517 samples. No K76T mutations were detected. The prevalence of the highly SP resistant quintuple mutant (DHPS 437 and 540, DHFR 51, 59, and 108) was 88% (44/50). None of the 270 samples genotyped to date has carried the DHFR I164L mutation that confers the highest degree of resistance to pyrimethamine.

Conclusions

This study confirms a complete absence of the K76T chloroquine resistance marker in isolates collected outside of Blantyre, suggesting that the withdrawal of chloroquine led to the disappearance of chloroquine resistance throughout Malawi despite continued chloroquine use and high rates of chloroquine resistance in neighboring countries. The high prevalence of DHFR and DHPS mutations is consistent with the high SP treatment failure rates recently measured in Malawi.

Surveillance of tuberculosis in Malawi prisons

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Objectives

The aim was to assess the magnitude of Tuberculosis (TB) problem in Malawian Prisons. The objectives were to determine the actual numbers of TB cases registered and treated in the Prisons in 2007 and 2006 respectively; to review the case detection process and practice of screening, diagnosis and management

of TB suspects and cases in Malawian Prisons; to explore the training needs of prison medical staff and assess perceptions of prisoners on TB control and TB service delivery in prisons.

Setting

All Malawi Prisons and selected district and central hospitals.

Study design

Retrospective data for 2006 and 2007 were collected from TB registers in all 27 prisons in the country using a standardised questionnaire. Prison data was cross checked with data captured in district TB registers at the hospitals as means of verification. Survey respondents included prisoners who were receiving TB treatment as well as prisoners who had completed their TB treatment (ex-TB patients); and prison staff.

Results

In 2007, 278 TB patients were registered in Malawi prisons. This represents a TB case notification rate of 835/100, 000 population; which is much higher than the TB case notification rate in the general population (219/100, 000 population) in the year. More TB cases were registered in prisons where medical staff are available than those without medical staff. There were 52 prison medical staff only in 17 Malawian prisons in 2007; these were mainly patient attendants (40%), HIV counsellors (25%), medical assistants (17%), TB/Malaria microscopists (10%) and others (8%). Only 17 (33%) of the medicals staff had ever undergone TB training. Cure rate for smear positive TB cases registered in Malawi prisons in 2006 was 68%; much lower than the national average (78%). Over 50% of ex or current TB patients interviewed at the prison indicated that they were screened for TB 4 weeks after onset of cough; than the recommended 1 week cough duration by the NTP.

Conclusions and recommendations

Management of TB in Malawi prisons has major gaps. Ministry of Health and the Malawi Prison Services need to strengthen their collaboration to improve this situation. Malawi prison services needs to deploy more staff in prisons with no medicals staff; and Ministry of Health needs to organise TB training specifically for prison medical staff. Apart from appalling prison conditions which facilitate easy and quick transmission of tuberculosis it may be that active TB case detection contributes to the higher rates compared to the passive case detection approach in the general population. This may be worthy considering and discussing further by the NTP and its stakeholders in TB control in Malawi.

Estimating HIV-1 incidence rate using acute HIV infections among adults in Blantyre

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Objective

To determine the incidence rate of HIV-1 among adult Malawians participating in the CHAVI-001 study in Blantyre.

Methods

The study was carried out on Malawians, ≥ 18 years old who gave consent to participate in screening procedures for the CHAVI 001 study in Blantyre, Malawi. Demographic, sexual behavior and clinical data were collected using standardized forms. Individuals with negative/indeterminate/discordant HIV antibody results were HIV RNA PCR tested. Those found positive were defined as acute HIV infections (AHI). A hypothetical follow up period of 12 weeks was used. Assuming that new HIV infections follow a Poisson distribution, estimates on probability or incidence of HIV infection were obtained.

Results

A total of 1085 clients were screened from 28th March 2007 to 30th June 2008. Of the 1085, 604(55.7%) were male while 481(44.3) were female. 614(56.6%) were HIV Negative. 575 (53%) had an STI at the time of screening. 589 individuals with negative/indeterminate/discordant antibody results were HIV RNA PCR tested and 12 of them had AHI. The estimated cumulative incidence rate of 8.83 per 100 p-y was obtained.

Conclusion

The estimates are high compared to those obtained in previous cohort studies in this population. Estimating HIV incidence rate by using AHI from cross – sectional studies may not be valid in some populations.

Recommendation

Prospective cohort studies on the same population need to be conducted in order to validate these findings.

Advantage of early start of HAART in the DREAM cohort of Malawian HIV positive patients

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DREAM program - Malawi

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Background

Timing of starting HAART in resource-limited settings is still under discussion. The aim of the paper is to provide indication about the opportunity of starting HAART at higher level of CD4 cell count.

Methodology

An observational prospective study has been carried out on 4,017 patients who started HAART in the Malawian DREAM centres (June 2005-June 2008).

CD4 count and viral load were assessed before starting HAART and periodically repeated. Main end-points were undetectable viral load, mortality and survival.

Results

At the baseline median values for Viral load, CD4 Cell count, Body Mass Index, Haemoglobin were 4.59log (IQR 3.8-5.1), 218 (104-367), 20.2 (18.4-22.4) and 11.4 (9.7-12.9) respectively. The one-year mortality rate was 9.5%. One year survival of patients higher than 200 CD4 count, under HAART, was 96.1% while it dropped to 85.8% in patients lower than 200 ($p > 0.001$). Mortality rate in the 200-350 strata under HAART doubled in patient with BMI lower than 18.5 or haemoglobin lower than 8 gm/100 ml. About 90% of the patients had a viral load lower than 400 c/ml 24 months after starting HAART. The highest incidence of viral load higher than 400 c/ml after 24 months of HAART (18.2%) has been observed in patients with baseline CD4 count lower than 200 and viral load higher than 5Log.

Conclusion

Early start of HAART seems to improve patients' survival and to protect against the onset of viral resistances. In order to maximize the advantages of this approach routine assessment of CD4 count and viral load should be offered to all HIV positive patients.

Retention and attrition among patients starting antiretroviral treatment within a district hospital and primary health centres in rural Malawi

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Background

“The hospital is too far away”, “I missed my appointment because I could not find enough money for transport”. For anyone who works in rural districts in Africa, this sort of statement coming from a patient brings no surprises. Many health-related interventions are often centralised in hospitals that are located far from rural communities.

Objectives

To report on rates of patient “retention” and “attrition” in the context of scaling-up antiretroviral treatment (ART) within a rural district hospital and its primary health centres.

Design and setting

Retrospective cohort study, Thyolo, Malawi

Methods

Comparative analysis of standardized ART outcomes of patients started on ART between 1 June 2006 and 30th June 2007, with retention defined as “alive on ART and transferred-out” and attrition defined as “death, lost to follow-up and stopped treatment”.

Results

A total of 4,074 patients (mean age 33 years, 64% female) were followed up for 1803 person-years: 2,904 were at the hospital and 1,170 at health centers. Retention rates per 100 person-years at hospital and health centers were 185 and 211, respectively (adjusted Hazard Ratio, HR 1.18 95% CI: 1.10-1.28, $P = 0.001$). Attrition rates per 100 person-years were similar and were 33 and 36 respectively (adjusted HR: 1.17, 95% CI: 0.97-1.4, $P = 0.1$).

At health centers the incidence of being “lost to follow up” was significantly lower than at the hospital (adjusted HR 0.24, 95% CI: 0.14-0.39, $P < 0.001$, risk reduction 77%) while the rate of reported deaths were higher at health centers (adjusted HR 2.2 95% CI: 1.76-2.72, $P < 0.001$, attributable risk 52%). Among patients that died at health centers, male patients (Odds ratio 2.1, $P < 0.001$) and those with unexplained weight loss of over 10% (Odds ratio 1.72, $P = 0.004$) were at higher risk of dying.

Conclusions

Although overall rates of attrition among patients starting ART at hospital and health centres are similar, ways forward are needed to reduce loss-to-follow up at the hospital level and deaths at health centres.

Outcomes of patients started on ART in a clinical trial setting in Blantyre, Malawi

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Objectives

To demonstrate the non-inferiority of a once-daily PI and once daily NNRTI-containing regimen compared with standard twice daily ARV therapy for the initial treatment of individuals infected with HIV-1 from diverse areas of the world.

Methods

The AIDS Clinical Trial Group (ACTG) designed a phase IV open-label randomized multi-site three arm antiviral efficacy trial to evaluate three ARV regimens for treatment naïve HIV infected participants. HIV-1 positive participants with a CD4 <300 cells/mL were recruited from QECH and other local sources, stratified according to HIV RNA levels, and randomized to: 3TC/ZDV+EFV; FTC+ ATV+ddI-EC; or FTC/TDF+EFV. Participants were seen every month for the first six months and thereafter every two months.

Results

One hundred eleven met entry criteria and were enrolled over 23 months. This included 60% females and 40% males with a mean age and BMI of 35.5 years 22.2kg/m², respectively.

The mean viral load at entry and week 96 was (copies/mL) 733597 and 2228. The mean CD4 count at screening and week 96 was 158 cells/mm³ and 390 cells/mm³, respectively. Ten participants withdrew consent, 13 confirmed virological failures, and 72 participants are fully suppressed. Eight participants died. The DSMB met in May 2008 concluded that FTC+ATV+ddI-EC was inferior to 3TC/ZDV+EFV. The protocol team directed sites to counsel and switch all participants on the PI-containing regimen to an NNRTI containing regimen without waiting for IRB approval. This was done at QECH over a two month period.

Conclusions and recommendations

High death rate in this cohort. Unboosted PI arm inferior to other two arms. High virological failure at two years.

Factors that influence adherence or default to HIV/AIDS antiretroviral therapy in Mwanza district, southern Malawi

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Objectives

To identify factors that influence default or adherence to antiretroviral (ARV) treatment for HIV/AIDS in order to develop evidence-based information, education and communication messages to be used during the group and individual counselling sessions at the ARV Clinic in Mwanza district.

Materials and methods

A community based case-control study was conducted in October 2007 in Mwanza district, southern Malawi. Cases were patients who defaulted ARV treatment for HIV/AIDS during the period 1 July 2005 (when the ARV Clinic started) to 30th September 2007. Controls were non-defaulters, patients who registered for ARV treatment in Mwanza during the same period (1 July 2005-30 September 2007) and were still taking the ARV drugs as of 30th September 2007. A total of 112 defaulters (cases) were identified from the ARV Register and followed up in their communities. An equal number (112) of non-defaulters (controls) were randomly selected from the ARV Register using systematic sampling method and followed up in their communities.

Results

Of 1,422 patients who registered for ARV treatment from 1 July 2005 to 31 October 2007 at Mwanza ARV Clinic, majority were females (63.6%), adults aged 25 years or more (84.4%) and had WHO Stage 3 of HIV/AIDS (81.0%). About two thirds (66.0%) of the patients were alive and still on treatment, 16.6 % died and 7.2% defaulted the ARV treatment. WHO Stage 4 of HIV/AIDS, the first three months of ARV treatment and rain/post rain season (Jan-Jun) were significantly associated with death while on ARV treatment. Rain/post rain season and being on ARV treatment for 4 months or more were significantly associated with default. Rain/post rain season was the only significant factor associated with transfer out. In the follow up, death was the commonest reason for defaulting ARV treatment (74.0%). Challenges of long distance to ARV Clinic, social stigma and discrimination and lack of guardian/community support were similar in both groups of patients.

Conclusion and recommendations

Death rate in the first 3 months of starting ARV treatment was unacceptably high. ARV Clinic based data underestimated the death rate while treatment and overestimated the default rate. Establishing out reach ART clinics or opening up new ART sites and intensifying active follow up may help to encourage people to start ARV early, keep them on treatment and know the true ARV outcomes.

High immunological and virological efficacy of second line treatment in Malawi

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Background

The Malawi ART program has started over 150,000 patients on first line treatment. However, to date, there is little experience with second line treatment with Zidovudine/Lamivudine/Tenofovir/Lopinavir/ritonavir. We report the virological, immunological and toxicity outcomes of patients initiating this regimen in Malawi.

Methods

We enrolled patients starting second line treatment in a prospective observational cohort and followed for clinical, immunologic and virological outcomes for 12 months. Clients were seen monthly and CD4, HIVRNA, and safety laboratories were performed quarterly and as needed. We performed logistic regression modeling to determine factors associated with successful virologic suppression at 12 months adjusting for baseline HIVRNA, CD4, degree of baseline HIV resistance, age, sex, duration of previous ART use and adherence.

Results

101 patients initiated second line treatment. Baseline characteristics of the cohort were 43.3% male, mean age= 38 years, median CD4, HIV1-RNA at baseline was 65 cells/mm³ and 54939 copies/ml. Mutations at baseline included TAMS (56%), K65R or 70E(24%), Q151M(19%), and NNRTI+M184V (17%) or wildtype (5%). After 12 months, there were 10 deaths and 3 patients lost to follow-up. As treated, the proportion with HIVRNA <400 copies at 3, 6, 9, 12 was 70.0%, 76.7%, 80.7%, and 85.2%, respectively. The mean increase in CD4 count at each time point was 80, 99, 131, and 142 cells/mm³. Grade 3 or 4 toxicities occurred as follows: Anemia, 9 patients; creatinine elevation, 3 patients; and glucose intolerance, 3 patients. Zidovudine and Tenofovir were discontinued in 7 and 5 cases, respectively. Poor adherence was the only factor associated with failure to achieve HIV-RNA<400 copies at 12 months.

Conclusions

Second line treatment in Malawi was associated with good immunologic and virologic outcomes among patients surviving to one year despite extensive baseline resistance. Adherence is critical to the success of second line treatment.

Bacteraemia, HIV and mortality in children with severe acute malnutrition (SAM)

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Objectives

To document the causes of bacteraemia in children admitted with severe malnutrition, and the association of bacteraemia with mortality, oedema, and HIV status

Setting

QECH malnutrition unit. Standard treatment for sepsis is initially with chloramphenicol and gentamicin, modified according to clinical response and blood culture results.

Materials and methods

Retrospective notes audit of children who had blood cultured by the MLW laboratory August 05- March 08

Results

Blood cultures were taken on 922 children from 4322 admissions (21.3%). No growth was found in 542, a contaminant in 222, and a pathogen in 153 (16.5%). 4 children had more than one pathogen, giving 158 pathogens. Non-typoid salmonella (NTS) was the dominant culture (71/158,44.9%), followed by other Gram negative organisms (Gm-ves) (55/158,34.8%), and Gm+ves (32/158,20.3%). HIV status was available for 715 children. Bacteraemia was associated with HIV seropositivity (OR 2.45, 95%CI 1.54-3.91), but not oedema (OR 0.72). Bacteraemic children had similar mortality (34.7%) to children with contaminants(33%) or no growth(32%). Overall ward mortality in 2006 was 23.8%. 45 NTS grew in HIV seropositive children, compared to 14 NTS in the HIV seronegative (OR2.16, p<0.05). Mortality in children with NTS was half (14/53, 26%), that of other Gm-ves (25/49, 52%), though similar to Gm+ves (10/29, 32%). Cough was reported in 61/121 NTS and Gm-ves, compared with diarrhoea, reported in 45/121.

Conclusions

HIV is a risk factor for bacteraemia in HIV seropositive malnourished children, with NTS the commonest pathogen isolated. Appropriate Gram negative

antibiotic cover is advised even in the presence of cough in SAM.

HIV status of family members of patients on ART at Queen Elizabeth Central Hospital, Blantyre

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Background

HIV testing of partners and young children of people who are on ART is an important method of identifying people who are HIV infected and may benefit from treatment. There is no data on how frequently adult ART patients take their family members for HIV testing in Malawi.

Objectives

To describe the frequency and pattern of HIV testing amongst family members of adults on ART at QECH.

Methods

Descriptive survey between November 2006 and January 2007. Healthcare workers interviewed patients on ART (who should have discussed HIV transmission on four occasions: VCT, WHO staging visit, group counseling, ART initiation) during routine clinic visits.

Results

832 patients (29% of adult patients on ART) were interviewed. 526 (63%) were female, comparable to the ART population at QECH. The mean age was 37 years (range 13-78). Of the 1240 children under 16 years and alive that patients reported having, 1004 (81%) had not been tested for HIV. 82% of children of male patients had not been tested, compared to 78% of children of female patients ($p=0.11$). Older children (>5 years) were less likely to have been tested than younger ones (84% vs. 70% $p<0.0001$). Only 29 children were reported to be on ART.

Patients reported that 63% of their partners had been HIV tested. Husbands of female patients were significantly less frequently tested than wives of male patients (53 vs. 72%; $p<0.0001$).

Conclusions

A large percentage of spouses and very high proportion of children of patients on ART were reportedly not tested for HIV. This may represent a big group who miss out on the benefits of ART and cotrimoxazole prophylaxis. Interventions to improve HIV testing in these individuals need to be designed.

Acceptance of repeat population-based voluntary counseling and testing for HIV in rural Malawi

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Objective

To examine the acceptance of repeat population-based voluntary counseling and testing (VCT) for HIV in rural Malawi.

Methods

Behavioral and biomarker data were collected in 2004 and 2006 from approximately 3,000 adult respondents. In 2004, oral swab specimens were collected and analyzed using enzyme-linked immunosorbent assay (ELISA) and confirmatory Western blot tests while finger-prick rapid testing was done in 2006. We use cross-tabulations with chi-square tests and significance tests of proportions to determine the statistical significance of differences in acceptance of VCT by year, individual characteristics and HIV risk.

Results

First, over 90% of respondents in each round accepted HIV test, despite variations in testing protocols. Second, the percentage of individuals who obtained their test results significantly increased from 67% in 2004 when the results were provided in randomly selected locations several weeks after the specimens were collected, to 98% in 2006 when they were made available immediately within the home. Third, whereas there were significant variations in the socio-demographic and behavioral profiles of those who were successfully contacted for a second HIV test, this was not the case for those who accepted repeat VCT. This suggests that variations in the success of repeat testing might come from contacting the individuals rather than from accepting the test or knowing the results.

Conclusions

Repeat HIV testing at home by trained health care workers from outside the local area, and with either saliva or blood, is almost universally acceptable in rural Malawi, and thus likely to be acceptable in similar contexts.

Selecting HIV infection prevention interventions in the mature HIV epidemic which exists in Malawi

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Objectives

To determine the size and location of incident cases of HIV infection in Malawi and assess the relative effect of selected intervention strategies to prevent future infections.

Methods

A UNAIDS “modes of HIV transmission” model was populated with Malawi data. The model was modified to take account of high infection risk during early HIV infection associated with concurrent partner transmission. The assumptions about men having sex with men (MSM) were validated by the survey work of Eric Umar et al, finding a HIV prevalence of 20%.

The model was manipulated to take into account possible HIV prevention interventions.

Results

The total new cases in the year numbering 98,000 (1.6% per year) originated from high and low risk sexual activity – about 46% each. Remaining cases were accounted for from commercial sex workers, medical injections and MSM.

The results of model manipulation were found to produce limited effect for some – condom use with casual sex and bar girls, circumcision and reducing STIs, and major effect with others – condom use with discordant couples, abstinence and a zero-grazing campaign. A combination was required to eliminate the epidemic. Condoms for discordant couples dealt with the infection now embedded in families. Abstinence and a zero-grazing campaign stopped new infections being introduced into susceptible families.

Discussion

The choice of intervention depends on the relative importance of the mode of transmission with which it interferes, its effectiveness and its cost. While cost might seem an impediment, despite its poverty Malawi is willing to spend considerable sums of money on one HIV related intervention – namely the use of antiretroviral therapy (ART). There are many more cost effective HIV/AIDS interventions which save more lives for the same cost. There should be no problem obtaining donor funds for any of these better value interventions if felt necessary for a successful HIV prevention strategy.

But which HIV prevention interventions are effective in the Malawian setting? The choice of appropriate interventions requires knowledge and experience of ways which are likely to change sexual behaviour in the Malawi population. Clearly interventions used to date have been inadequate, insufficient or inappropriate. A revitalised strategy will need to include more of those existing strategies that have worked and new ones which tackle the two modes of transmission now found to be so important in Malawi – concurrency and discordancy.

Disclosure of HIV+ status and the associated factors among HIV+ people in Zomba

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Introduction

Disclosure of ones HIV status is a prerequisite of receiving psychosocial support in the community. A study was done to assess the level of disclosure and associated factors as part of the Zomba Door to Door HCT Program, which is likely to identify many HIV positive people, in order to inform the support services that need to be provided to the HIV+.

Study objectives

- To assess the level of HIV positive result disclosure among HIV+ people in Zomba.
- To assess the factors associated with disclosure of HIV positive result.
- To assess the level and reasons of nondisclosure among the HIV positive people in Zomba.

Methodology

Quota sampling was used to recruit 101 participants of both sexes in age groups 15-25 and 26-49. Participants were drawn from adults who were attending a support group, who are HIV positive and had known their sero-status for at least three months.

Results

The median number of people to have disclosed their HIV positive result to participants is 3 (0-158) and 4.5 (0-50) among females and males respectively. A quarter had not disclosed their result to anyone. Of the three quarters disclosed their results, more females than males disclosed (<0.05) and more frequently to relatives than friends. Of those who did not disclose their results the mostly stated reason for non disclosure was fear of upsetting the friend or partner followed by fear of wider disclosure.

Discussion

Although joining a support group is a step towards being open about one's status and hence more likely to disclose, a significant number of HIV+ people attending CBOs had not disclosed their status. The approach that the Zomba Home to Home HCT programme is adopting to address these findings will be discussed.

Prognosis of stroke in malawi, a country with high prevalence of HIV. First 50 patients

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Objectives

To describe outcome of acute stroke in patients treated in QECH.

Setting

Medical wards in QECH, Blantyre, Malawi

Materials and methods

This is a prospective cohort study of patients with acute stroke. Consecutive adult patients with a first acute stroke are recruited and followed up after 6 weeks, 6 months and then 6 monthly intervals long term. All stroke patients receive standard medical care. CT-scan, ECG and laboratory tests relevant to etiology are done. Modified Rankin Scale (mRS) is used to estimate the clinical outcome and modified National Institute of Health Stroke Scale (mNIH-SS) to estimate stroke severity. The eventual sample size will be 150.

Results

6 week data on the first 50 patients is reported. Median age was 54.5 years (SD \pm 17.4 years). 27 (54%) patients were men. 16 patients (32%) had an intracranial hemorrhage, 33 (66%) patients had ischemic stroke. One patient did not get CT-scan. 14 (28%) patients were HIV reactive, of whom 12 (86%) were aged <55 years, result is not available in 14 (28%) patients. 15 (30%) patients had very severe or severe stroke (mNIH-SS more than 18). Most patients were bedridden on admission to hospital (mRS = 4-5 in 44, 86%, patients), 3 (6%) patients had good function (mRS =1-2). After six weeks 14 (28%) patients were still bedridden. 8 (16%) patients had died, this included all patients (n=5) with very severe stroke (mNIH-SS 26 or more). 19 (38%) could walk without help (mRS = 0-3) and 8 (16%) were independent (mRS = 0-2).

Conclusions and recommendations

These early results suggest that patients with poor function are admitted to our wards. Patients with good function do not come to hospital or are not admitted. Mortality was lower than expected for acute phase of stroke partly due to the fact that patients with previous strokes were not included. HIV as a risk factor was more common in young patients.

Factors that contribute to rape and defilement in Malawi

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Background

Cases of rape and defilement have always make headlines in Malawi local newspapers and many go unreported. There have been very saddening cases, some succumbing to severe genital trauma, some have even become unconscious and later died. Victims involved have ranged from the very young to old with the majority of them under 15 years of age.

Objective

No in-depth research directly involving rape and defilement perpetrators has been conducted in Malawi to establish the leading factor/s that contribute to this inhuman crime unless unpublished despite efforts by women and child activists to halt the same. Hence the research has explored and established factors that contribute to this malicious act.

Methods

This was a descriptive study employing both quantitative and qualitative research methods was carried out at Chichiri and Zomba prisons. 81 male convicts of rape and defilement who gave informed consent were recruited in the study.

Results

67.90% of the respondents committed the crime due to sexual gratification, 19.60% due to alcohol and drug abuse and that none (0.00%) of the respondents had committed the offence due to HIV cleansing. It therefore follows that the myth of HIV cleansing in Malawi very rarely exist. No specific reasons were given as to why a crime was committed on a specific age group of the victims. Results also show that cases of this kind are on the increase hence a need for policy makers to intervene. The survey also established that those mostly convicted of defilement did not know that it was illegal to engage in sexual relationships with girls under the age of 18 even if she had given consent hence a need to educate the public on the same.

The prevalence of vitamin d deficiency in TB patients at QECH, Blantyre

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Objective

Vitamin D is a fat soluble of which 90% of it is manufactured in the skin photo chemically. Pigmented skin and lack of sunlight exposure are risk factors for vitamin D deficiency. Vitamin D deficiency is associated with impaired macrophage function/immunity to mycobacterium. Clinically, vitamin D deficiency is associated with susceptibility to TB. An addition of Vitamin D supplements to standard anti-TB chemotherapy could enhance immunity to tuberculosis infection hence reduce the progression of the disease. Therefore this study assessed the prevalence of Vitamin D deficiency in adult TB patients at QECH and investigated associations of vitamin D deficiency

Methods

This was a cross sectional quantitative study that was conducted in the TB ward in a main central hospital (QECH) in Blantyre Malawi. All adult TB patients from 18 years and above either in-patient or out-patient well recruited between June 30–July 18, 2008. Data was collected using a structured questionnaire and blood samples were collected to measure vitamin D levels.

Results

Hypovitaminosis D (≤ 75 nmol/L) was observed in 74.5% (120/161) (95% CI: 67.1-81.1) of the patients. 11.2% (95% CI: 6.3-16.1) of the patients had sVDD (≤ 25 nmol/L). 42.2% (95% CI: 34.6-49.8) of the patients had VDD (≤ 50 nmol/L) and VDI (50-75nmol/L) was observed in 32.3% (95% CI: 25.2-40.1). 13.6% (95% CI: 6.95-20.3) of the in-patients had sVDD while 6.8% (95% CI: 0.4-13.2) of out-patients had sVDD. 48% (49/102) (95% CI: 38-58.2) of the in-patients had VDD while 32.2% (19/59) (95% CI: 20.6-45.6) of out-patients had VDD. There is an association of VDD between in-patient and out-patient ($X^2=6.6$, $df=1$, $P=0.01$). The odds of VDD in in-patients are 2.83 (95% CI: 1.27, 6.34). No relationship was established between BMI (kg/m²) and vitamin D status ($r^2 = 0.01$). No association of VDD with admission period, HIV status, age, gender or type of TB (PTB, EPTB) and TB frequency ($p>0.05$).

Conclusion

Hypovitaminosis D was highly prevalent in adult TB patients at QECH and in particular VDD was exceptionally high in in-patients. In-patients have three times chance of having VDD than out-patients. Vitamin D status is neither affected by HIV status nor nutritional status. In-patients had worse nutritional status than out-patients.

Impaired lung function in Malawi is associated with wood smoke

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Introduction

The WHO Global Burden of Disease and Risk Factors Project estimated that chronic obstructive pulmonary disease (COPD) was the sixth leading cause of death in nations of low and middle income countries, accounting for 4.9% of total deaths. 3 billion people rely on biomass fuel as their main source of domestic energy for cooking, heating and lighting. Its use is often exacerbated by lack of ventilation in homes using biomass and by the poor design of stoves which do not have flues or hoods to take smoke out of the living area. It is likely that exposure to biomass smoke is a major global risk factor for the development of COPD.

Objective

To examine the association between biomass fuel exposure and lung function.

Methods

Individuals from homes who had taken part in an air sampling study were invited to perform spirometry. Snowball sampling was then used to invite more members from the community to take part. Urban homes were located in Blantyre, rural homes in Chikwawa. Spirometry was performed according to ATS/ERS guidelines, using a Vitalograph® 2120 spirometer handset and Spirotrac IV® software. A questionnaire of cooking and lighting fuel type was also asked. Multivariate (stepwise regression) analysis was carried out on database.

Results

363 individuals performed spirometry and answered the questionnaire. The average age was slightly lower in the urban homes (36.4 versus 42.6 years). There was a significant difference ($p<0.001$) of types of cooking fuel use between rural and urban homes. Rural homes cooked almost exclusively with wood and urban homes used primarily charcoal. In the rural area participants were more likely to cook outside in the dry season. The urban population showed more variation in the cooking place but most participants cooked indoors.

Analysis of spirometry results showed a significant difference between individuals who cooked with wood compared to charcoal. FEV1 in individuals who cooked

with wood had a mean FEV1 of 2.41 compared to 2.77 with individuals who cooked with charcoal.

Conclusion

This is the first spirometry survey done in Malawi. Our data suggests that impaired lung function is associated with wood smoke, and that living (and growing up) in rural environment is worse for health. More data on COPD prevalence, effect on children's respiratory development and infection rates are required.

The effects of the AIDS epidemic on the elderly in rural Malawi

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Objectives

High morbidity and mortality in rural sub-Saharan Africa is expected to have direct impacts on individuals and their extended families, such as diverting family resources from the elderly to the working-aged and increasing the burdens on the elderly to care for the sick and orphans, with implications for their long-term well-being. Distinguishing between short-term and long-term effects of AIDS on families, however, requires longitudinal data on family characteristics both preceding and following the illness and death of a family member.

Study methods

In this paper, we use longitudinal data collected between 1998 - 2008 by the Malawi Diffusion and Ideational Change Project (MDICP) in rural Malawi to assess the effects of the AIDS epidemic on the elderly. In particular, we examine the relationship between adult children's HIV status and (1) intra-familial exchanges, (2) the health status of the elderly, and (3) living arrangements and household structure.

Results

We present the characteristics of both adult children and the elderly in the MDICP sample, including: age structure, living arrangements, HIV status, and self-reported health status. We then tabulate intra-familial transfers, measured in terms of monetary transfers, non-financial transfers, and time spent caring for someone who is ill. Lastly, we estimate several regression models to investigate the relationship between HIV status, household composition, intra-family transfers, and the health status of the elderly.

Conclusion

Longitudinal data are valuable to distinguish between short-term and long-term effects of AIDS on families, and the consequences these effects may have on the elderly.

Evaluation of supportive companionship for women during labour at Queen Elizabeth Central Hospital, Chatinkha maternity wing

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Objective

To evaluate the effect of provision of supportive companionship during labour at Chatinkha Maternity Wing (CMW), Queen Elizabeth Central Hospital (QECH)

Methods

A cross-sectional qualitative study was conducted in CMW at QECH recruiting 192 women who had a supportive companion, 148 supportive companions and 25 health personnel who had ever provided service to a woman during labour, in the presence of her supportive companion. These were interviewed using a structured questionnaire with closed and open-ended questions.

Results

Women (99.5%), supportive companions (96.6%) and health professionals (96%), found the intervention of some benefit mainly in the form of psychological and physical support to the labouring woman and assistance to the health care providers. 75% of the women got to know that they could have a companion upon arrival in the labour ward with 40% of them preferring a companion different from the one they had. All three stakeholders suggested labour ward modifications to improve capacity, privacy, and safety.

Conclusion

Continuous supportive companionship for women during childbirth was found beneficial among labouring women being supported, companions providing the support as well as health professionals attending to the supported women. The majority of women delivering in CMW do not know they are allowed a supportive companion before reaching the labour ward resulting in women getting companions they do not want, who unwillingly accompany them and health professionals sparing some time to educate the companions. There are still some misunderstandings regarding the role of the supportive companions among the companions.

Barriers to sexual and reproductive health (SRH) service utilization in health facilities in rural Malawi

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3. Research Support Centre, College of Medicine, University of Malawi

Objectives

To assess the barriers to sexual and reproductive health service provision among men and women of childbearing age.

Study Methods

Secondary data analysis of the impact evaluation study for the Promoting sexual and reproductive health project implemented in Lungwena-Makanjira catchments in Mangochi was done. The impact evaluation study focussed on assessing changes in family planning uptake and utilization of SRH services. As well as monitoring the process indicators for reproductive health service provision and reproductive health service impact indicators.

Results

Despite increased knowledge of government policies and programmes on sexual and reproductive health utilization of these services in general was low. Although antenatal attendance is high, use of delivery and postnatal services is lower at 28.5% and 31.1% respectively. Use of modern contraceptive methods in the area was at 39%. A number of barriers for women, men and youth to access health services were cited and these included: socio-cultural factors myths and misconceptions, poor service provider's attitudes, service provision barriers like privacy, client-provider relationship and understaffing; poor infrastructure and physical access barriers.

Conclusions and recommendations

The findings show that people in Makanjira and Lungwena areas are aware of the sexual and reproductive health services available at the health facilities. However, several barriers affect their ability to access and fully utilize the available services. Service Providers should focus on improving quality of care in the existing health facilities especially in areas of privacy, waiting time and staff attitude. Establishment of male focussed clinics should be encouraged and the available youth friendly clinics should be strengthened.

Marriage transitions in Malawi: an overview

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Objectives

We provide an overview of the Marriage Transitions in Malawi (MTM) project. The project entails the collection of innovative longitudinal data from a sample of young adults in Salima district, as they transition to marriage, in order to understand the links between partnership formation and dissolution, sexual experiences, community norms, changes in socio-economic status prior to and after marriage, and HIV risk.

Study methods

The MTM project is collecting multi-dimensional, longitudinal data from 2007 onwards. The sample is adolescent-aged and young adults. In 2007, we surveyed 1,185 never-married Malawians in Salima ages 13-25. This was followed by In-Depth Partnership Interviews (February-March 2008) and a household survey July-Sept 2008 which included offering VCT for respondents and surveying community leaders.

Results

The design of this project intends to capture the rapid changes in socioeconomic conditions, marriage and living arrangements that occur for young non-yet-married persons. Indeed, we observe such changes in the first rounds of data. Over this 1 year, 18 percent of the baseline sample had married and less than one-third of all respondents have stable household composition. Over ten percent of respondents moved to a new location.

Conclusions

Rapid changes in living arrangements and demographics are observed for young adults. These changes may affect future socioeconomic outcomes since these changes are linked with marriage and other salient events. Understanding these processes is important for understanding poverty and health in Malawi.

Recommendations

Longitudinal surveys such as MTM are necessary to understand the complex socioeconomic and demographic transitions that occur among young adults in Malawi. In addition, such quantitative data collection should be complemented with qualitative research efforts.

POSTER PRESENTATIONS

Dehydroepiandrosterone sulphate (DHEA-S) serum levels and placental malaria (PM)

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4. Baylor College of Medicine Children's Foundation, Malawi.

5. Emma Kinderziekenhuis, Academia Medical Centre, University of Amsterdam, the Netherlands.

Objectives

(1) To investigate if raised levels of DHEA-S are associated with reduced prevalence of PM; (2) to describe the association between C-reactive protein (CRP) and DHEA-S concentration in women with and without PM; (3) to describe maternal DHEA-S profiles in relation to three maternal genetic polymorphisms (MGPs) (methylenetetrahydrofolate reductase (MTHFR), Glucose-6-phosphate dehydrogenase (G6PD), sickle haemoglobin (HbS)).

Materials and methods

Out of the 364 pregnant mothers from Montfort Hospital in Chikwawa District, Southern Malawi (between Jan - July 2005) recruited in this study, 224 (112 cases and 112 controls) had their biochemical and hormonal analyses of their blood serum samples done by ELISA techniques. The controls were selected at random from odd numbers out of the total number of subjects recruited. Reading of the plates was done by the Dynex Technologies Revelation (DTR) 4.21 for the DHEA-S and DTR 4.25 for CRP and in both cases; curves were fitted using the Cubic spline function.

Results

The frequency of active 14(21.2 %) and past 3(9.7 %) malaria-infected cases, were significantly lower in subjects with low DHEA-S level compared with subjects within the reference range 52(78.8 %) and 28(90.3 %) respectively; $p=0.005$, for trend). Of the three MGPs we investigated, only the C677T variant for MTHFR gene has a protective effect against the deleterious effects of DHEA-S (OR, 0.4, 95 % CI, 0.05-0.3; $p=0.04$).

Conclusions and recommendation

There was an association between levels of DHEA-S and age of the individual ($p=0.004$). Raised levels of DHEA-S mingled with cumulative exposure and augmented by some genetic predisposition as evidenced by MTHFR gene polymorphism, are associated with reduced prevalence of placental malaria in the Malawian women sampled.

An investigation of the beliefs, attitudes and practise of health care workers towards the use of oral morphine in the palliative care management of HIV/AIDS and cancer patients in the southern region of Malawi

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Background

Palliative care has been highlighted as an urgent need for patients with both HIV/AIDS and cancer in sub-Saharan Africa. Morphine is considered by the WHO as the drug of choice for severe pain in cancer. Pain is common in people with HIV/AIDS, though it is frequently unrecognised or poorly treated. The beliefs, attitudes and practise of health care workers is a critical factor in patients' accessibility to morphine.

Methods

This was a prospective descriptive study. Data was collected by the use of semi-structured interviews from clinicians, nurses and pharmacy workers from five institutions in the Southern region of Malawi. Interview data was analysed to key themes and notes from observations were used to correlate the data.

Results

Three key themes were identified. Respondents believed that morphine should be more widely available for patients with both HIV/AIDS and cancer related problems. It was out of stock at three of the study sites. Some expressed concern about morphine being available in the home setting. Many believed that patients or health workers may become addicted to oral morphine. There was confusion between oral morphine and pethidine. There was a desire for better education and training at all levels.

Discussion and conclusions

Despite the fact that wider medical availability has not been found to significantly influence opiate addiction, this was a widespread fear. Many patients live far from health services and need effective pain relief once they are at home. Regular provision of adequate oral morphine, review of home based care services and education and training at all levels are necessary to improve quality of life for those affected by severe pain with HIV/AIDS and cancer related problems.

A prospective survey of quality of life, tumour response, and chemotherapy-related side effects in patients with HIV-related Kaposi's sarcoma at Queen Elizabeth Central Hospital, Blantyre, Malawi

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Background

Kaposi's sarcoma (KS) is the most common malignancy in Malawi, explaining at least 39% of the nation's cancer diagnoses in 2005. Tiyanjane Clinic provides both in-patient and outpatient palliative care services for patients with KS. Vincristine chemotherapy is administered in combination with antiretroviral therapy (for those who are infected with HIV) along with medication to control pain and other symptoms. This survey aims to evaluate the palliative care service provided to HIV positive patients with KS at Tiyanjane clinic.

Methods

This is a prospective survey. Fifty patients considered eligible for vincristine will be recruited. The primary outcome measure is quality of life, measured using the African Palliative Care Outcome Score (APOS). Secondary outcomes are functional status, tumour response, and chemotherapy-related side effects.

Results

Data will be analysed in order to present interim results.

Discussion

There is a lack of research evidence around concurrent use of antiretroviral therapy and adjunctive chemotherapy in HIV positive patients with KS. There is also a lack of research evidence to support palliative care interventions in Africa. This study will assist the Ministry of Health to assess the impact of its current management guidelines for patients with Kaposi's sarcoma, and will provide a baseline against which other treatment regimens may be compared.

Management of hydrocephalus and spina bifida

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2. Department of Education, Mzuzu University, Mzuzu, Malawi.

Objectives

1. Comparing and contrasting the effectiveness of the Malawian shunts with the alternative methods of Chhabra shunts.
2. Identify from the analysis how many mothers knew if folic acid could help reduce the chance of delivering the child with congenital anomaly.

Setting

Queen Elizabeth Central Hospital, Department of Surgery, referral and teaching hospital.

Materials and methods

Prospective clinical data were collected using the questionnaires, medical files of hydrocephalus and spina bifida cystica. The quantitative analysis of data was done with the aid of computer based Statistical Packages such as Microsoft Excel and SPSS 15.0 for windows.

Results

Over seven years, hydrocephalus 345 (61.9%) were operated as compared to spina bifida cystica 35(6.3%) which were operated. The commonest cause of hydrocephalus was post meningitis and followed by spina bifida cystica and congenital abnormalities. All children less than eighteen months underwent ultrasonographic screening to confirm the diagnosis of hydrocephalus. Older patients had computerised Tomography (CT) scan. The outcome in the study group was very satisfactory with four hundred and seventy-six patients represented 85.5%. The mother who took folic acid pre-pregnancy were one hundred and thirty-five representing 24.2% and those who did not take folic acid were four hundred and twenty- two representing 75.8%. Lost to follow-up were forty-five (8.1%), Thirty-six patients died represented (6.5%). Those with peritoneal shunt blockage were twenty-two(3.9%), six patients experienced peritoneal shunt prolapse through the anus represented 1.1%, ventricular catheter blockage were four (0.7%) and Scalp wound infections were four(0.7%).

Conclusions and recommendations

Counselling should include advice about the use of folic acid in future early pregnancies to reduce the risk of neural tube defects. The Chhabra shunts are superior to the 'Malawi' shunts used previously, as they did not lead to over-drainage. If patient was brought to the hospital with something protruding from the anus, it was not a tapeworm but the peritoneal catheter which had perforated the bowel wall and requires to be repositioned.

D abnormal cervical lesions among HIV positive women attending to cervical cancer screening at Kamuzu Central Hospital in Lilongwe, Malawi (april-june 2008)

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Objectives

This study was conducted to determine prevalence and association to HIV-infection of abnormal cervical lesions among women attending to cervical pre-cancer screening aged 20- 45years and to get providers views on the issues of screening younger HIV positive women aged between 20years and 29years.

Methods

This was a descriptive cross sectional study, both qualitative and quantitative. Stratified convenient sampling was used to identify 110 HIV-positive and 110 HIV-negative women.

Results

In women aged 20-29years, 42%(46/108) and in all women, 34%(74/220) of HIV-infected individuals had abnormal cervical lesions. HIV infection was associated with a five fold increase in abnormal cervical lesions among all women screened. (relative risk5.72, odds ratio12.06,95% confidence interval(C.I.)5.82–25.0, P-value<0.001.

HIV infection was associated with a five fold increase in abnormal cervical lesions among women aged 20-29 years, (relative risk5.36, odds ratio16.01,95% confidence interval(C.I.)5.98-42.91,P-value<0.001. Eighty percent of providers approved screening younger HIV-positive women,71% of providers perceive these young women as being at risk of developing invasive cancer earlier than anticipated.

Recommendations and conclusion

The author concludes that HIV-infection is significantly associated with abnormal cervical lesions. Provider have positive attitude towards screening younger HIV-positive women despite a critical shortage of staff. MoH should consider screening women aged 25-29 also, especially if HIV-positive.

Audit of general paediatric clinic at Queen Elizabeth Central Hospital (QECH) Blantyre, August 2007 – July 2008

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Objectives

To audit the following characteristics of General Paediatric Clinic at QUECH, Blantyre: attendance and trend over time; common presentations; investigations and medications required; residence of patients and adherence to follow up.

Study methods

A prospective audit recruiting patients from the General Paediatric Clinic at QUECH. One thousand patient visits were recorded and adherence to follow up monitored over a twelve-month period. The data was recorded by the treating doctor during consultations and later entered into a spreadsheet by the principal investigator.

Results

A total of 1000 patients were seen in clinic over this period. Up to 46 patients, mostly under fives, were seen per clinic; the numbers increasing over time. Of the patients asked to return, 72% attended (one third later than expected). The most common reason for late return was lack of transport. The majority of patients had seizures, developmental delay and cerebral palsy. Asthma, diabetes, juvenile arthritis and renal disease were also common. Management undertaken reflected the diagnosis given, thus the majority received seizure medications.

Conclusion

The audit highlights aspects of general paediatric care within Malawi that require ongoing attention for effective management of chronic diseases outside the sphere of HIV, tuberculosis and malaria.

Recommendations

Efforts are required to address problems in treatment, medication supply and patient and family education surrounding these common chronic paediatric conditions.

‘New variant famine’ in Malawi? Impacts of AIDS on food security and livelihoods of young people in thyolo district

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Objectives

To investigate the ‘new variant famine’ hypothesis by examining the impacts of

chronic sickness and death of family and household members on the livelihoods of young people.

Methods

Qualitative participatory research with 37 young people and the 76 households of a village in Thyolo District. At district, regional and national level 33 policy interviews with NGO, donor, and government representatives.

Results

Initial findings suggest it is difficult to identify specific impacts of AIDS where general food insecurity is complexly linked to poverty, shortage of land, insufficient farm inputs, lack of capital and skill shortage etc. With different degrees of severity for individuals AIDS is infiltrating all aspects of how young people secure future livelihoods e.g. affecting the strength of their social networks etc.

Conclusions

Tentative conclusions suggest that the livelihood activities young people are encouraged to aspire to in school are severely limited, however, they engage in a wide variety of minor income generating activities which can provide increased food security. AIDS-related sickness and death, and the lack of money, increased care burden and lack of adult support that comes with it, can disrupt young people's ability to start up these activities, thus affecting their future food security.

Recommendations

Recommendations include sensitizing the education system to the needs of rural, vulnerable young people, more skills and business training, better access to agricultural inputs, fair prices for agricultural commodities, social protection, decent employment opportunities and conditions.

Linkages between young people's physical mobility, health and well-being: studies from rural and urban Malawi

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Objectives

To investigate the linkages between young people's health, well-being, mobility and mobility potential in Malawi. To compare the impact of mobility and transport constraints on young people's health and well-being across diverse types of geographical location within Malawi.

Setting

Eight different sites: i.e. urban, peri-urban, rural and remote rural sites in two different agro-ecological zones (Blantyre Shire Highlands and Lilongwe Plains).

Methods

Intensive qualitative ethnographic research with children and adults - approximately 49 in-depth interviews (including some with accompanied walks), 9 focus groups, and 4 life histories at each of 8 sites; conducted November 2006 to July 2008.

Results

There are clear connections between aspects of physical access in contrasting locations including distance; freedom to travel; availability, cost, regularity, and reliability of own/public transport. There is also a diversity of connections between young people's mobility constraints and their health and well-being.

Conclusions

Young people have a range of health-related mobility experiences both across varied geographical locations and within different locational contexts, which reflect various factors such including age, gender, birth-order, socio-economic status, patterns of health service and transport provision.

Recommendations

There is a need for further research on the potentially significant implications of Malawi's enormous transport gap (and consequent demands for young people's labour as pedestrian porters, especially in remoter rural locations) for their health and well-being.

Burden of non-communicable disease risk factors in Malawian women

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Objectives

- To estimate the prevalence of common risk factors for non communicable diseases (NCDs) in Malawian women.
- To identify female groups at increased risk of NCDs.
- To estimate the current burden of NCDs risks factors nationally.

Methodology

We used data from the national demographic health survey (DHS) of 2004. STATA ver. 10 was used for statistical analysis and to construct risk factors of interest i) Obesity, defined as body mass index (bmi) equal to or greater than 30, ii) Smoking, defined as use of cigarettes, cigars and other tobacco excluding tobacco chewing and/ or snuffing and iii) Alcohol drinking defined as use of any alcoholic drinks.

We stratified the results by wealth quintiles, calculated wealth quintile specific prevalence rates and assessed inequalities in the distribution of the risk factors among social economic groups using the concentration curve.

Results

11,698 females aged 15-50 took part in the survey. Prevalence rates of obesity, alcohol drinking and smoking were 2.4% [2.1-2.7], 2.2% [1.9-2.4] and 0.6% [0.4-0.7] respectively. Prevalence rates increased with age peaking at age 44-50 for obesity (5.3%) and smoking (3%) and at age 40-44 for alcohol drinking (6.4%). Within the 15-50 age group (N =3,227,235), 76,600 women are obese, 69,573 drink alcohol and 18,760 smoke.

Smoking and alcohol drinking are concentrated among the poor, concentration indices (CI) -0.27919 and -0.12389 respectively. The odds of the poorest quintile female smoking or drinking compared to her richest counterpart being 6.5 and 2.1 respectively. Obesity has a pro rich distribution, CI 0.467724. Compared to the poorest quintile, the odds of the richest quintile female being obese is 10.8.

Conclusion

The current burden of obesity and alcohol drinking among females merit public health attention.

Recommendation

There is need for surveillance of risk factors for NCDs and institution of public health preventive and control efforts for obesity and alcohol drinking at least for female groups at high risk.

Impact of HIV and AIDS on older people

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Community Education Department, College of Medicine Johns Hopkins Project Research Project.

Objective

To better understand the ways that HIV and AIDS affects older people (the aged) in Malawi.

Methodology

This was a desk-based study on the impact of HIV/AIDS on older people. Literature from Sub Saharan Africa (SSA) and other parts of the world was reviewed and synthesised. It was located through various search engines like Medline, Pub med, Scopus and Eldis. Unpublished documents were accessed and reviewed because published data from SSA, especially Malawi, is limited on this subject. Web sites of various organizations including, HelpAge International, WHO, UNFPA, UNAIDS and Avert were also visited.

Results

Older people have taken up the responsibility of caring for their sick children and grandchildren. In addition older people are under serious financial, physical and emotional stress due to their new role of providing care. The study has further revealed that older care providers have limited knowledge of the disease and they are excluded from programmes and policies that aim at halting the spread of HIV/AIDS, despite their role as care providers to those who are infected and affected.

Conclusion and recommendation

This study has shown that older people are playing a vital role in providing care to those who are infected and affected by HIV /AIDS. There is need to realise main carers and what resources they need.

Presentation and outcomes of antiretroviral therapy in older, HIV positive adults in Malawi

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Objectives

In developed countries HIV infection in people aged over 50 is characterized by more advanced disease at presentation, rapid clinical progression, less immune reconstitution on antiretroviral therapy (ART), higher rates of clinical ART failure and more side effects compared with younger adults. ART outcome in the elderly has received little attention in resource limited settings, including Malawi. The aim of the study was to investigate age related differences in ART outcomes.

Study methods

Age stratified data on demographic and clinical outcomes was generated using the database for all adults ever started on ART within the national ART programme at Queen Elizabeth Central Hospital (QECH).

Results

14% of the QECH clinic population (876 people, 388 female), were aged ≥ 50 years. Mean age (SD) of patients <50 years was 35.3 ± 7.4 years, of those ≥ 50 years was 56.1 ± 5.5 years. Older adults (≥ 50 years) were less likely to have an AIDS defining illness (WHO clinical stage IV) at presentation: 15.1% vs. 18.9% ($p < 0.01$). The mean weight (SD) of older adults was higher at baseline (55.8 ± 11.3 vs. 52.5 ± 10.9 kg, $p < 0.0001$) but they gained less weight during treatment (3.1 ± 11.3 vs. 52.5 ± 10.9 Kg are these weight gains....?); also need to mention mean duration of treatment/follow-up or better take mean weight gain during the first year or 6 months of treatment, $p < 0.0001$). Older adults reported more symptoms of peripheral neuropathy, 6.4% vs 2.9%, $p < 0.0001$. Mortality was the same in each group. what about losses to follow up, transfer-outs and adherence?

Conclusions

The clinical picture at presentation and ART outcome in people aged over 50 years differs from younger adults in Malawi and compared with descriptions of older HIV positive adults from Europe and America.

Recommendations

The distinguishing features of this large group of patients on ART warrant further study.

Pneumococcal immunity in adults with HIV infection

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Background

HIV seroprevalence in Malawi is around 11% in adults, rising to 34% in Blantyre antenatal clinics. An early manifestation of HIV infection is increased carriage and susceptibility to disease by bacteria that normally colonise the upper respiratory tract (URT). *S. pneumoniae* is an important HIV-related pathogen and is associated with increased morbidity and mortality. Vaccine prevention is therefore an important goal. For better vaccine design and implementation there is a need to understand the immunological basis for this overwhelming burden of adult HIV-related pneumococcal infection. Immune responses that normally control pneumococcal burden start to breakdown in HIV due to viral cytopathic effects on CD4 T cells

Objectives

Our study aims to investigate the early stages of HIV infection and the impact on T and B cell responses in adults.

Patients and methods

We have commenced a cross-sectional study in patients with early HIV infection (WHO stage 1) recruited from the QECH anti-retroviral therapy (ART) clinic following informed consent (COMREC no. P.03/08/626). 40 control and 100 HIV+ patients will be recruited and peripheral blood, nasopharyngeal swab and saliva samples will be obtained. Pneumococcal specific antibody producing memory B cells will be quantified by ELISPOT. Effector and central memory T cells will be assessed using IFN- γ ELISPOT and CFSE proliferation respectively. A novel population of CD4 T cells, Th17 implicated in recruiting phagocytes will be quantified using a functional IL-17 intracellular cytokine assay.

Results

Preliminary data shows robust T-cell immunity to a range of pneumococcal antigens in most control HIV negative adults. Results from HIV-infected individuals will be shown.

Conclusions

Together, these immunological and carriage data will provide the mechanisms by which HIV disables pneumococcal immunity in early HIV infection.

MRI services at the Queen Elizabeth Central Hospital/College of Medicine

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Objective

To provide magnetic resonance imaging services various constituencies in Malawi.

Setting

The new MRI building, located on the ground of the Queen Elizabeth Central Hospital.

Materials and methods

Magnetic resonance imaging is a technique primarily used for central nervous system disorders. In Malawi, this will include strokes, paraplegia, coma, and

complications of AIDS. Diagnoses involving traumatic injuries (e.g., sports injuries, road traffic accidents and assaults) and orthopedic disorders (e.g., chronic joint and back problems) and various tumours can also be assisted by the MRI. The detailed delineation of anatomy by MRI makes it a better imaging modality in these settings than computed tomography (CAT scanning) or ultrasound.

Results

To date (28 September 2008), nearly 100 patients have been imaged at the centre. These comprise 37 QECH (government) patients, 12 patients from other government hospitals, 29 research patients and 19 private patients. The images are reviewed in Malawi, and are then transmitted to the Dept of Radiology at Michigan State University for secondary review and comment.

Conclusions and recommendations

The Magnetic Resonance Imaging service is expected to positively impact on patient care, research and teaching in Malawi. Suggestions from the community are encouraged as we begin to familiarize ourselves with all that this technology has to offer.

Mucocutaneous manifestations in children with HIV, related to degree of immunosuppression

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Objective

To describe mucocutaneous manifestations related to the degree of immunosuppression in HIV infected children presenting at Queen Elizabeth Central Hospital (QECH) paediatric HIV clinics.

Setting

Paediatric HIV Clinics, QECH

Study Design

Cross-sectional descriptive study

Methods

HIV infected children aged 18months -15years who had not commenced anti retroviral therapy were recruited. Demographic and clinical data (WHO stage, CD4 counts) were collected and a complete one-time dermatologic examination of the scalp, face, mouth, neck, trunk, genitalia, and extremities was conducted on each patient.

Results

A total of 74 participants were recruited. The prevalence of mucocutaneous disorders was 72%. Most patients (70%) with skin conditions were in clinical stage 3. All patients in stage 4 had at least one dermatologic finding. The prevalence of mucocutaneous disease in patients with severe, advanced, mild immunosuppression (by CD4-count) was 57%, 21% and 16% respectively. Mucocutaneous findings were significantly more common in patients with severe, compared to the group with mild to advanced immunosuppression ($p = 0.017$).

The most common disorders were Oral Candida (18%, mean CD4% 11.2), Papular Pruritic Eruptions (15%, mean CD4% 18.8), Verruca plana (13%, mean CD4% 12.7), Tinea Capitis (9%, mean CD4% 15.1) and Verruca vulgaris (8%, mean CD4% 15.4).

Conclusion

The majority of patients at paediatric HIV-staging clinics have mucocutaneous manifestations. Prevalence of these findings increases with advancing immunosuppression. Education of health care workers on common skin signs in immunosuppression is important to initiate early HIV testing.

Assessing the potential impact of gender norms and gender inequality on a couples' home-based intervention in Malawi

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Objectives

To assess the acceptability and feasibility of home-based and clinic-based couples' family planning (CFP) and couples' HIV voluntary counseling and testing (CVCT) in reproductive aged men and women.

Materials and methods

This formative, qualitative study was designed to inform a subsequent intervention of couples' home-based family planning counseling and HIV voluntary counseling and testing. Data were collected through ten in-depth interviews with married couples and six focus group discussions with men and women separately in Mpemba, Blantyre, Malawi. A manual thematic data analysis was done.

Results

Clearly-defined gender roles influence couple communication, knowledge and uptake of reproductive health services. Although male and female participants indicated that wives are expected to refer to their husbands in all matters, they discussed ways in which wives can avoid confrontation or potential conflict

through covert contraceptive use and non-disclosure of HIV test results. Findings suggest that the proposed intervention appears to provide several benefits to both partners, but needs to be carefully implemented given the differential impacts for women versus men.

Conclusions and recommendations

Although couple interventions have shown to positively influence health outcomes, it is important to consider existing gender relations in ensuring equal benefit and protection to both partners.

Pharmacokinetics (PK) of tenofovir disoproxil fumarate (TDF) after administration to HIV infected pregnant women and their newborns

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Background

There are few data describing tenofovir PK when administered to pregnant women during labor or to newborns.

Methods

HPTN 057 is a phase I trial of tenofovir disoproxil fumarate (TDF) administered to HIV-infected pregnant women in Malawi and Brazil and to their neonates. Cohort 1 women received a single 600 mg TDF dose at onset of labor; PK sampling was done on mother and infant. Cohort 2, only newborns received 3 TDF doses of 4 mg/kg (as soon as possible after birth, days 3 and 5) with PK sampling after each dose. The PK target was to keep infant tenofovir (TFV) conc >50 ng/ml. Amniotic fluid and breast milk samples were collected.

Results

53 mother-infant pairs were studied. Cohort 1 mothers delivered 2.88 (0.28-14.58) hrs after dosing. Maternal TFV delivery conc was 122 ng/mL, cord blood TFV conc was 76 ng/mL with cord blood TFV conc > 50 ng/mL in 66%. Ratio of cord blood to maternal delivery TFV conc was 0.61 (0.06-1.64). Amniotic fluid TFV conc (n=5) was 259 (142-725) ng/ml; ratio of amniotic fluid to maternal delivery TFV conc was 3.01 (1.56-4.90). In cohort 2, day 3 predose TFV conc was >50 ng/mL in 14% of infants and day 5 predose concentration was >50 ng/mL in 10% infants. TFV was detectable in 16% breast milk samples collected during 1st week of life with conc of 13 (6-18) ng/mL.

Conclusions

Maternal TFV exposure after dosing in labor was similar to that observed in non-pregnant adults. TFV was concentrated in amniotic fluid. One-third of cord blood conc were <50 ng/ml. After infant dosing, TFV elimination was rapid.

Informed consent: practices and views of trial nurses at Johns Hopkins Research Center

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Objectives

To describe the practices and views of trial nurses involved in obtaining informed consent from prospective trial participants (PTPs) at Johns Hopkins Research Center; regarding the processes used to assist potential participants understand the research trial, expectations and process.

Setting

Johns Hopkins Research Center at Queen Elizabeth Central Hospital in Blantyre, Malawi

Materials and methods

A qualitative research design using a phenomenological method was selected to study the views and practices of trial nurses involved in recruitment and informed consenting of potential participants for research trials because this method allows participants to speak freely about their personal and lived experiences, allowing first hand practical, information. Data was collected using a semi structured in-depth interview guide containing open-ended questions.

Results

There were 10 participants' interviews, 9 females and 1 male. Minority of respondents regarded informed consent as a process of disclosing

information to PTPs. Majority of the respondents viewed informed consent as papers containing a lot of research information, there was selective disclosure of information, and emphasis was on benefits not risks.

Conclusion and recommendations

Study results revealed that there was some lack of understanding of informed consent among trial nurse regarding purpose and process of informed consent. There is need for recruitment of appropriate staff into position, adequate preparation of trial nurses through formal training on informed consent.

Distinguishing features of cryptococcal and tuberculous meningitis in adults in Malawi

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Background

Meningitis is a frequent presenting problem amongst Malawian adults infected with HIV. Common causes of non-pyogenic meningitis include Cryptococcal Meningitis (CM) and Tuberculous Meningitis (TBM). CM and TBM present with a similar clinical picture, and clinical differentiation between the two is difficult. In resource poor settings laboratory tools are limited and confirmatory microbiological diagnosis is often not possible. Poor diagnostic accuracy contributes to poor clinical outcomes.

Objectives

- To describe the clinical and laboratory features of CM and TBM
- To identify clinical features and basic laboratory features which reliably differentiate CM and TBM

Setting

Adult medical wards at Queen Elizabeth Central Hospital from April – December 2007.

Methods

Patients with suspected meningitis were prospectively recruited. Clinical features were recorded and lumbar puncture was performed. Based on laboratory cerebrospinal fluid (CSF) findings, patients were classified as having confirmed CM (CSF positive for India Ink stain, Cryptococcal culture or Cryptococcal Antigen) or confirmed TBM (CSF positive for mycobacterial culture). Following univariate analysis comparing admission variables between patients with CM and TBM, a stepwise logistic regression model was derived to identify a discriminatory index between CM and TBM.

Results

573 patients with suspected meningitis were recruited. CSF findings consistent with meningitis were found in 263(45.9%). Of patients with meningitis, 112 (42.6%) had CM and 46 (17.5%) had TBM. 98.2% of patients with CM and 89.1% of patients with TBM were HIV positive. Median CD4 counts were 56.5x106/l and 60.0x106/l (p=0.14) respectively. The presence of high CSF opening pressure (p=0.014) and low CSF white blood cell count (p=0.011) were associated with CM. The presence of fever (p=0.010) and reduced Glasgow Coma Score (<0.001) were associated with TBM.

Conclusion

Clinical features and simple, widely available laboratory tests may allow differentiation between cryptococcal and tuberculous meningitis and therefore guide diagnosis and management of non pyogenic meningitis in settings where sophisticated laboratory tests are unavailable.

Paediatric haematology and chemistry values in Malawian infants- a quest for locally relevant laboratory reference ranges

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Background

Laboratory reference ranges are essential in patient and research participant care. Determining locally relevant reference ranges is therefore critical. Currently laboratory reference ranges are not based on the Malawian paediatric population.

Objective

To establish laboratory reference values for healthy Malawian infants from birth through 6 months of age.

Methods

Blood was collected from healthy non-HIV exposed infants from birth to 190

days of age from August 2006 through May 2007. Age categories were created (days 0/Birth, 1-7, 8-21, 22-35, 36-56, 84-98 and 170-190). Median values and ranges for hemoglobin [HB], white blood cell count [WBC], platelet count [PLT], absolute neutrophil count [ANC], and alanine aminotransferase [ALT]) were calculated. Centile points at 2.5 and 97.5 were calculated to determine the normal reference ranges for each parameter. Graphs were generated to determine age related trends for each parameter.

Results

A total of 308 infants were enrolled. The respective median and range values were: HB (12.7g/dl and 8.3 - 22.0 g/dl), ANC (2.4 x 10³/ul and 0.8 x 10³ - 13.1x10³/ul) PLT (283.0 x 10³/ul and 59.7 x10³ - 62.2 x10³/ul), WBC (9.9x10³/ul and 4.5 x10³ - 23.9 x10³/ul) ALT (15.0 IU/L and 2.1 - 36.0 IU/L).

Conclusion

We have established normal laboratory values that may form a basis for locally relevant reference ranges for HB, ANC, PLT, WBC, and ALT in a paediatric population of 0-6 months in Malawi.

The impact of hepatitis b and c co-infection on antiretroviral outcomes in Malawi

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Background

There is sparse information about the effect of Hepatitis B [HBV] and Hepatitis C [HCV] co-infection with HIV on antiretroviral therapy [ART] in sub-Saharan Africa, where most first-line ART regimens include nevirapine and lamivudine, fuelling concerns about hepato-toxicity, HBV resistance and ART outcome.

Methods

We performed detailed, prospective follow-up on 300 adult Malawians starting stavudine, lamivudine and nevirapine within the national ART scale-up program. Monthly clinical follow-up and regular laboratory monitoring took place. Chronic viral hepatitis [CVH] status (HBsAg with neutralisation to confirm chronicity and HCV antigen/antibody) was determined retrospectively. One year results are presented according to CVH status.

Results

Prevalence of CVH co-infection was 19% (HIV/HBV 11.7%; HIV/HCV 5.3%; HIV/HBV/HCV 2%). At baseline there was no significant difference in age, sex, body mass index, alanine-amino transferase [ALT] level, WHO clinical stage, CD4 and HIV viral load between those with or without CVH.

70% of patients were alive on ART after one year (CVH 75.4% vs. others 67.9%; p=0.725). There were no significant differences in the reasons for stopping ART including death (CVH 10.5%, others 14%), absconded (CVH 5.3%, others 1.6%), and side effects (CVH 1.1%, others 3.3%). Neither were there significant differences in severe skin rash and hepato-toxicity as indicated by ALT rise at weeks 14, 26 and 52.

ART outcome markers after one year were also similar: viral load <400 was CVH 81.4% vs. others 84% (p=0.49) and median CD4 was CVH 291 vs. others 328 (p=0.54).

Conclusions

There is a high prevalence of chronic viral hepatitis among Malawians starting nevirapine, lamivudine and stavudine, but this did not have a negative impact on ART outcome and toxicity after one year. Longer-term follow up and effects of HBV resistance to lamivudine need to be studied to elucidate the full impact of CVH on ART in sub-Saharan Africa.

Can task shifting of some HIV related activities to community level contribute to increased access and decongestion of health facilities? The Thyolo experience in southern Malawi

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Background

Through MSF-MoH comprehensive HIV/AIDS support programme in Thyolo District, there has been a growing number of patients reported on ART. There are currently 14,758 patients ever started, of which 10,559 are active and alive (72%). In order to address the growing needs of the increasing number in a context of severe human resources in health shortages, innovative methods to organize HIV services have been implemented. Among these are utilization of community nurses as an important step in providing follow up care and access for People living with HIV/AIDS (PLWHAs). PLWHAs in support groups actively involved with disclosure and speaking about their experiences, peer supporting each other have continued to provide substantial coverage in the district and adequate adherence levels.

Methods and site

Community nurses carry out clinics in CBO buildings in 24 geographically sites in Thyolo District. The following activities takes place: WHO staging, pre-ART counseling, treatment of minor OIs, refill of cotrimoxazole, nutrition support. Volunteers (often PLWHA) and HSAs assist these clinics through patient mobilization, pre-packing of drugs and registration. 85 support groups consisting of PLWHAs meet on monthly basis during which they encourage each other for timely visits to the clinic as well as importance of adherence.

Results/lessons learned

Averagely 1750 consultations takes place monthly through the community clinics. 250 patients are monthly staged, pre-ART counseled and referred for initiation in the nearest Health Centre, after which they are encouraged to become part of the community support network. 71% of patients on ARVs in Thyolo District are registered in this network. Approximately 3 nurses are currently used for referring 1000 patients to be initiated on ART per year.

Conclusions/next steps

Task shifting some activities to the community relieves workload from clinic staff at health facility level, use of patient support groups eases access and adherence for patients. Involvement of PLWHAs, volunteers and the community in HIV/AIDS activities is key, not in replacing clinical work but complementing and expanding it. Refilling of ARVs for stable patients could also be shifted to community level.

Review of vesico-vaginal fistula repairs at Nkhoma Hospital, Malawi in the year 2005.

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Introduction and objectives

Vesico-vaginal fistula (VVF) is prevalent in the developing world and Malawi is no exception. In Africa alone the number of cases are estimated at 2 million. The development of the fistula is mainly caused by obstructed labour. Incompetent obstetrical services and delay in health seeking during delivery are the main reasons for the occurrence of fistula. VVF has many negative psychosocial implications for the women and often lead to social isolation.

The objective of this study was to look at characteristics of VVF patients, to document the reasons for the VVF to occur and review the outcomes of surgery on patients operated at Nkhoma.

Study methods

A retrospective analytical study was done on 64 VVF patients operated at Nkhoma Hospital in the year 2005.

Results

Of 64 patients, 50 (78.1%) had surgery only once in 2005, whereas 11 (17.2%) of them had surgery twice in 2005. Three patients had surgery 3 times in 2005 (4.7%). All VVFs had an obstetric aetiology and 20 patients (31.3%) were primigravida before the delivery that caused their VVF; 29 patients were multigravida (45.3%) and for 15 patients (23.4%) this information was not available.

Conclusion and recommendations

Of all 64 patients, 35 had delivered by caesarean section (54.7%), whereas 18 (28.1%) had a vaginal delivery (which included vacuum extractions and episiotomies) and for 11 (17.2%) this information was unavailable. Two patients delivered at home (3.1%), 2 (3.1%) delivered at the Traditional Birth Attendant (TBA), 46 patients (71.9%) at a hospital and for 14 patients (21.9%) it is unknown.

After surgery 47 (73.4%) patients were not leaking urine at the time of their discharge, either after their only operation or after their last one in 2005. 8 patients (12.5%) were not dry at their time of discharge. For six patients (9.4%) the information could not be obtained.

The majority of patients that developed VVF's did deliver at the hospital, but by that time the damage has already been done. Delay at home or at the TBA were contributing factors. From the data available it was surprising to note that the majority of patients were multigravida. The results of VVF surgery (73.4% dry upon discharge) are reasonable considering that the majority of surgery was done by non-specialists.

Although nearly 72% of patients eventually delivered at the hospital, the delay before the delivery is likely responsible for the VVF to occur. Further study in cultural beliefs and other obstacles to timely care is needed to prevent this devastating complication of childbirth to occur.

Onchocerciasis transmission risk and rapid epidemiological assessment following simulium damnosum outbreak in Zomba district, Malawi.

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Setting

Due to an outbreak of biting flies around Zomba Plateau in 2006 a rapid epidemiological assessment (REA) was instituted.

Objectives

To establish the type of black flies that were biting besides establishing infectivity/vectorial capacity and levels of biting nuisance.

To establish onchocerciasis prevalence to determine warrant for mass treatment in affected communities.

Materials and Methods

150 male and 279 females from 14 villages were screened using World Health Organisation-African Programme in Onchocerciasis Control (WHO/APOC) rapid epidemiological assessment for Onchocerciasis (REA) protocol. Fly Infectivity was done following WHO/APOC-REA guidelines. Fly identification used taxonomic keys and molecular tools.

Results

DNA analysis and cytotoxic analysis showed *Simulium zombaense* was identified to be responsible for the bites. 1222 black flies were collected and 1204 were dissected of which 743 were parous, 2 infected and 1 infective. During the dry month of August when fly density is low, the mean fly bite density was 64 bites/man/day. The maximum biting rate is 199/man/day at Malosa School and the minimum is zero at Likangala on the Likangala. In April when fly population is at maximum the highest biting rate is 63 bites/man/30 minutes at H Parker mission area near Domasi River.

The study showed intense fly bites as indicated by 88/100 prevalence rate of onchodermal condition.

Conclusion and recommendation

The findings indicate that the prevalence rate is below the required levels to warrant mass drug administration.

Male circumcision and regional variation in HIV prevalence in rural Malawi

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Objectives

To account for regional variation in HIV prevalence in Malawi, and to investigate the relationship between women's HIV risk and spousal circumcision within the South.

Study Methods

We use survey and HIV data (2001-2006) from women part of the Malawi Diffusion and Ideational Change Project, a longitudinal study in rural Mchinji, Balaka, and Rumphi. We employed logistic regression analyses to identify which social and biological factors are related to HIV risk, and whether their effects vary by region.

Results

Within Balaka, women married to uncircumcised men have twice the odds (OR=2.10; p<.05) of being HIV positive compared to those with circumcised spouses. Being married more than once and an absence of spousal co-residence reduces the circumcision effect to non-significance. Being married more than once in Mchinji and Rumphi also increases a woman's likelihood for being HIV positive.

Conclusions

Our data suggest that women in the South are more likely to be HIV positive than in the North when women in the South are married more than once and have had an absent spouse. But the South is also intrinsically more risky, meaning that because more people have HIV in that region, a person living there is simply more likely to contract it. It is likely that if more men in the South were uncircumcised, HIV prevalence would be twice as high. Being married more than once also matters in the North in terms of HIV risk.

Recommendations

Male circumcision should be considered as HIV prevention in Malawi, as it will reduce new infections. But circumcision alone will likely not eradicate the disease, and other, cost-effective interventions should be considered.

The prevalence of red cell antigens and antibodies in the Malawi population

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Summary

As there were no reliable data for the prevalence of red cell alloantibodies or antigens in the population of Malawi a study was set up to screen 1,000 patients for the presence of antibodies and to type their red cells for ABO, RhD, C, c, E, e and K antigens. Five hundred donor samples were also tested for these antigens plus Fya, Fyb, Jka, Jkb, S, s.

Red cell antibodies were found and identified in 11 patients [1.1%]; two were anti-D, two anti-S, one anti-Lea+b and six were anti-M, four of which were found in non-transfused males suggesting they might be naturally acquired.

The antigen frequencies found were similar to those previously reported in Central Africa but with 97.2% of donors being Fy(a-b-). Of the 1000 patients tested all were K negative and only 3 donors were found positive, one being European. Approximately 3.5% of Malawians are D negative, lower than the usual 8% quoted for Africans, and the incidence of the R1 gene is also lower than reported figures.

The antigen frequencies found show that there is a high level of red cell antigen homogeneity among Malawians except for the S, RhE and RhC antigens.

These data confirm the assumption made that pre-transfusion antibody screening is not necessary even if affordable. From current data, as the incidence of haemolytic disease of the newborn is rare, antenatal antibody screening too is not needed but more work needs to be done to find the real incidence of this condition.

The feasibility of a district wide door to door HIV testing and counseling in Zomba

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Introduction

HIV Testing and counseling (HTC) is a prerequisite of preventative, care and treatment services for people infected with HIV. Facility based testing in Zomba has resulted in 10% of the population having tested and yet the 2004 DHS shows that over 70% wanted to be tested. Further studies have shown that a significant proportion of all HIV transmission is between regular sexual partnerships of discordant couples, the majority of whom are not aware of their HIV-status.

Home based HTC programme was started in Zomba to improve access. Early assessment of the programme was undertaken to assess the social demographic characteristics of the Home Based HTC program clients in Zomba, the extent to which the program identifies discordant couples and other factors associated with HIV seropositive status. HIV prevalence among the program clients and associated factors in Zomba.

Results

The program had reached significantly more females, 59.1% relative 40.9% males (N= 39725 p<.001) but of the similar ages (F= 30.2 [CI 30.0 – 30.4], M= 30.2 [CI 29.9 – 30.4]). Of the clients reached 3.3% refused to have an HIV test done. 63% are tested as couples. This is significantly higher than previously (11.5%). 7.8% of those tested were HIV positive with significantly more females (9%) (p<.001) being positive compared to males (6.1%). The HIV prevalence is significantly higher among people who reported to have not had a test before (5.2%) compared to 2.5% who had a test before (p<.001).

4.3% of all the couples tested are discordant couples with similar HIV+ result by gender.

Discussion/Conclusion

The programme is popular. Although more females are being tested the difference is being narrowed down compared to the reported 20.5 % and 8.9% females and males respectively who reported to have had a test before. With almost tripling the percentage tested as couples compared to previous tested, it is very likely that almost 3 times more discordant couples will be counseled and tested. The HIV prevalence is lower in the program compared to Zomba District's DHS 2004 results but the program has offered an opportunity to clients who would have not had the test in the facility based HTC.

Implications of the findings will be discussed.

A study to final diagnosis in patients admitted to the medical high dependency unit (HDU) at QECH

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Objective

To reach a final diagnosis in 51 sequential patients who were admitted to the HDU with respiratory failure, negative sputum ZN smear and in whom bronchoalveolar lavage (BAL) could be done.

Methods

All patients were tested for HIV, CD4 count and had a chest x-ray. BAL fluid was examined for: Gram stain and culture, Ziehl-Neelsen stain and mycobacterial culture, PCR for atypical organisms, viruses and fungi and an IF stain was done for PCP. Blood was cultured for bacteria and fungi. A final diagnosis was made using predefined criteria.

Results

51 patients were included (55% male) with mean age 35 years. 21% died during admission after an average length of 9 HDU days. 94% were HIV+ve with median (mean) CD4 of 57 (120) cells/mm³ (range 1-966). 39 patients had > 1 diagnosis. Amongst the primary diagnoses bacterial pneumonia was most common (31%) followed by PCP (29%), PTB (22%) and KS (16%). No atypical organisms were identified; blood cultures grew pneumococcus (4) and cryptococcus (1); a positive viral PCR was found in 11 BAL samples.

Conclusion

Patients admitted to the Medical HDU ward are mostly HIV positive with low CD4 count; there was often more than one diagnosis but diagnoses seem limited mainly to (combinations of) bacterial pneumonia, PCP, PTB and KS.

Indoor air pollution in malawi: use of biomass fuels produces high particulate matter and carbon monoxide concentrations in both urban and rural homes

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Introduction

Indoor air pollution from biomass fuel is a major health concern in the developing world, responsible for an estimated 36% of mortality from respiratory disease as well as other non respiratory pathology. The risk of pneumonia in young children exposed to biomass smoke is increased by exposure to unprocessed solid fuels by a factor of 2 – 3. There has been no work done previously in Malawi to quantify the level of exposure to biomass smoke.

Objective

To describe and quantify the amount of smoke exposure from biomass fuel that occurs in homes over a 24 hour period. We also compared 4 different types of air sampling device in order to assess their appropriateness for this environment.

Methods

Blantyre homes were selected randomly from individuals who had previously volunteered for studies at MLW. The rural homes were chosen from Chikwawa. We measured the indoor air quality in 61 homes (31 rural / 31 urban) using 4 different devices (sidepak, UCB, gravimetric and carbon monoxide monitor). A questionnaire of cooking and lighting fuel type was also administered.

Results

The majority of questionnaires were answered by women. The average age was slightly lower in the urban homes (36.3 versus 43.4 years). There was a significant difference (p<0.001) of types of cooking fuel use between rural and urban homes. Rural homes cooked exclusively with wood and urban homes used primarily charcoal. In the rural area participants were more likely to cook outside in the dry season. The urban population showed more variation in the cooking place but most participants cooked indoors. Dry season and wet season cooking location between rural and urban were statistically significant (p<0.01).

Respirable dust levels in both the urban and rural environment were high with a mean gravimetric device Time Weighted Average (TWA) level of 226µg/m³. Levels of particulate matter (measured using a sidepak and UCB monitor) were >250 µg/m³ for over 1 hour per day in over 50% of rural homes compared to 22% of urban homes. Carbon monoxide levels in the urban homes were significantly higher than in rural homes (p<0.001).

Conclusion

This is the first assessment of indoor air quality in Malawi. We have demonstrated that 24 hour time-weighted average concentrations of particulate matter in rural and urban homes exceed WHO recommended levels for outdoor air quality by between 3.7 and 5.3 times. Indoor air levels in Malawian homes are high and justify further investigation. Interventions should be sought to reduce exposure to concentrations less harmful to health.