Abstract No. 3

THE SURVIVAL OF PATIENTS WITH CANCER OF THE CERVIX IN NAIROBI, KENYA

Emma Nelima Khaemba¹ Caroline W. Mugo¹ Charles Mutai²

¹Jomo Kenyatta University of Agriculture and Technology
²Kenya Medical Research Institute

Background: Cervical cancer ranks as the second most frequent cancer among women globally. Most patients present at advanced stages, leading to high mortality rates. Information on the survival of cervical cancer patients in Kenya which is necessary in estimating the burden of the disease and informing policy is lacking.

Objective: To estimate the survival of patients with cancer of the cervix in Nairobi, Kenya

Methods: A descriptive non-intervention study of selected patients with cancer of the cervix was carried out in Nairobi, Kenya. 211 patients with an initial diagnosis of cancer of the cervix between January 2006 and June 2007 were followed up for five years respectively. The Life table was used to estimate the cure fraction. The Kaplan-Meier estimator was used to estimate the survival duration while the Cox regression model was used to identify covariates that significantly affect the survival duration of patients

Results: 108 (51.18%) patients were confirmed dead within that period, 15 (7.11%) were still alive and 88 (41.70%) were lost to follow up. The patients’ median age was 46 years. The probability of surviving beyond five years was estimated at 0.198. The cumulative proportion surviving at the end of the study interval was 0.67 at stage I, 0.36 at stage II, 0.15 at stage III and 0 at stage IV. The age of patients, stage at diagnosis and level of education significantly affects the survival.

Discussion: As is the trend in developing countries most of the patients were diagnosed at advanced stages. Only 15 (7.11) had an initial diagnosis at stage I. In this study survival is poor compared to results from other developing countries such as Uganda. This can be attributed to low levels of awareness, lack of standard treatment for those diagnosed at advanced stages and low levels of education.
**Conclusion:** High levels of health awareness should be embraced. Early detection of cervical cancer through regular screening and, prompt and comprehensive treatment should be taken up to improve the overall survival of the patients.

---

**Abstract No. 5**

**ASSESSMENT OF QUALITY MANAGEMENT IN THE USE OF COMPUTED TOMOGRAPHY MACHINES IN KENYA**

**Jeska S. Wambani¹, Geoffrey K. Korir²**

¹Radiology Department, Kenyatta National Hospital, Hospital Road, P.O. Box 20723-00202 Nairobi. Kenya.

²Department of Physics and Applied Physics, University of Massachusetts Lowell, One University Avenue. Lowell, MA

**Background:** The use of x-rays in radiation imaging is ever increasing in magnitude with increase in radiological procedures, and complexity of radiology equipment, Computed Tomography (CT) scanning included. Quality management with patient radiation dose monitoring is fundamental in optimising radiation protection and safety while optimising image quality.

**Objective:** To assess the level of quality management with respect to quality assurance, image quality and patient dose in CT facilities in Kenya.

**Methodology:** A quantitative method was developed and used to score the results obtained from the physical image quality, patient dose and quality assurance inspection results. Physical images were obtained from American Association of Physicists in Medicine (AAPM) water phantom, and patient dose measured using head and body phantoms. The results obtained were compared with internationally recognized standards including the European Guidelines Quality Criteria for CT and the International Basic Safety Standards for Protection against Ionizing Radiation.

**Study Design:** A quality assurance inspection, physical image quality and patient dose assessment in eighteen representative CT facilities.
**Results:** The overall findings placed the national quality management performance level at 57 ± 2% while patient dose, image quality and quality assurance administration performance were 71 ± 4%, 61 ± 3% and 40 ± 2%, respectively.

**Conclusion:** The national level in quality management system in diagnostic radiology was benchmarked as good. Diagnostic Reference Levels (DRLs) were proposed in order to enhance the optimization of radiological protection of patients in Kenya. In future, we hope to demonstrate optimization of patient dose using typical patient dose in the new state-of-the-art multi-slice CT.

**Recommendation:** Kenya should adopt Radiology facility accreditation system whereby a scrutiny of scores from each stage in the medical imaging chain is performed to enhance quality improvement.

---

**Abstract No. 6**

**ASSESSMENT OF RADIATION EXPOSURE DURING INTERVENTIONAL PROCEDURES IN KENYA**

Jeska S. Wambani¹, Mike M. Kidali¹ Geoffrey K. Korir²,

¹Radiology Department, Kenyatta National Hospital
²Department of Physics and Applied Physics, University of Massachusetts Lowell, One University Avenue. Lowell, MA

**Background:** The increasing number of interventional procedures in Kenya benefits many patients and results in radiation burden. Some patient radiation dose studies in developed countries have reported patients’ cumulative skin dose exceeding the thresholds causing skin erythema. To ensure safety, there is a need in Kenya for training on operational monitoring and recording of patient radiation exposure.

**Objective:** To quantify ionizing radiation exposure to patient during interventional procedures and establish national diagnostic reference levels (NDRLs) for clinical radiation management.

**Methodology:** The cumulative reference point air kerma, kerma area product, fluoroscopy time and other operational parameters were monitored for 50 children and 261 adult patients procedures in five catheterization laboratories in Kenya.
To estimate the risk associated with the exposure, effective doses were derived from kerma area product using conversion factors from Monte Carlo models.

**Study Design:** Cumulative reference point air kerma, kerma area product, fluoroscopy time measurements recorded at the only five catheterization facilities in Kenya.

**Results:** About 3% of the measured cumulative reference point air kerma for the interventional procedures approached the threshold dose limit for deterministic effects. In interventional cardiology, the results obtained for both children and adults indicated that 33% were below the DRLs for each of the following; cumulative reference point air kerma, kerma area product, and fluoroscopy time. The respective figures in adult interventional radiology were 29%, 43%, and 43%.

**Conclusion:** The measured patient doses were above the available DRLs in the literature indicating a need for optimization continuous monitoring and recording of patient dose.

**Recommendation:** To promote radiation safety, catheterization facilities need to establish a radiation monitoring notification threshold in addition to the use of the newly established NDRLs as a quality assurance tool.

---

**Abstract No. 7**

**EFFECT OF FRESH AQUEOUS GARLIC EXTRACT (*ALLIUM SATIVUM* L.) ON ERYTHROPOIESIS IN ADULT MALE RABBITS: A STUDY ON PERIPHERAL BLOOD ANALYSIS**

**W. M. Munyikombo**

Garlic (*Allium sativum* L.) is a cultivated plant. Its wild progenor originated in the high planes of West-Central Asia. It has been widely used as food and medicine. Its effects have been demonstrated in both animals and humans. Garlic has been the subject of intensive scientific research, nonetheless, little research has been done on garlic with regard to its action on specific blood cells. The present study examined the effect of freshly prepared Aqueous Garlic Extract (AGE) on the process of Erythropoiesis (Red blood cell formation) in peripheral circulation in rabbits for a period of 30 days. The aim of the study was to determine whether garlic’s active compounds have any erythropoietic effect in rabbits in vivo.
It was also used to establish whether there is a dose-dependent relationship between garlic administered and erythropoiesis.

**Methods:** 30 out of 50 Adult Male New Zealand white rabbits were randomly selected and used for the study. Animals in the 5 experimental groups were orally fed on 5 different absolute concentrations of freshly prepared AGE as 26, 52, 104, 208 and 416mg/kg body weight of freshly prepared AGE respectively. Blood was withdrawn from the lateral ear vein of each animal every 7th day. Red blood cell count (RBC), Packed cell volume (PCV), Hemoglobin levels (Hb) and reticulocyte counts (Retics) were done to assess the effect of garlic on peripheral blood.

**Results:** Overall, the results suggest that the placebo did not affect the erythropoietic activity in the peripheral blood from animals in the control group, they therefore remained erythropoietically normal. There was much statistical significant difference in the analyzed peripheral blood parameters between the control group and the 5 experimental groups. There was an increase in the erythropoietic activity in experimental groups 4 and 5 (71.4%, p<0.05) as compared to groups 1 and 2 (33.3%, p< 0.01) and consequently the control group as microscopically seen from the peripheral blood parameters (RBC and Retics). Conversely, dependent on the dosage, AGE seemed to have an influence in each experimental group, thereby eliciting sigmoid (S-shaped) dose-response curves for PCV and Hb levels, and an exponential growth curves in RBC and reticulocyte counts between the groups.

**Conclusion:** From the study, these results indicated that freshly prepared AGE, or as used in its naturally occurring form (fresh garlic bulbs), has a positively significant effect on the process of erythropoiesis, for it accelerates the rate of reticulocyte production, which was used as an index for the increased rate of Red blood cell production.

**Keywords:** Garlic, Reticulocytes, Erythropoiesis, packed cell volume
Abstract No. 8

PREVALENCE OF METHICILLIN RESISTANT \textit{STAPHYLOCOCCUS AUREUS} (MRSA) AMONG PAEDIATRIC PATIENTS ADMITTED IN ICU AND NICU AT KENYATTA NATIONAL HOSPITAL, NAIROBI-KENYA.

Samuel Rutare$^1$, Ruth Nduati$^2$, Francis Onyango$^2$, Samuel Kariuki$^3$.

$^1$Department of Paediatrics and Child Health, University of Nairobi, Kenya. $^2$Department of Paediatrics and Child Health, University of Nairobi, Kenya. $^3$Centre for Microbiology Research, Kenya Medical Research Institute.

\textbf{Background:} Methicillin-resistant \textit{Staphylococcus aureus} (MRSA) remains a public health problem in both the developed and developing countries. The recent data from the National Nosocomial Infections Surveillance System of the Centers for Disease Control and Prevention showed in August 2003 that MRSA on average accounts for 57\% of \textit{S. aureus} isolates causing nosocomial infection in intensive care units (ICUs). Infections caused by methicillin- or oxacillin-resistant \textit{S. aureus} (MRSA) are mainly nosocomial and are increasingly reported from many other different countries worldwide. Most of the data available today on MRSA is from America, Europe, Australia and no research has been done in Kenyatta National Hospital ICU or NICU to find out the prevalence of MRSA and hence appropriate measures. The objective of this study was to determine the prevalence of methicillin resistant staphylococcal aureus (mrsa) among paediatric patients admitted in NICU and ICU of Kenyatta National Hospital-Kenya.

\textbf{Method:} Two hundred eighteen specimens (155 nasal swabs and 63 tracheal aspirates from those intubated) were collected over a period of five months from 150 patients admitted in NICU and ICU, Kenyatta National Hospital. Samples were then taken to KEMRI Microbiology laboratory where conventional culture techniques, characterization of \textit{S.aureus}, PCR and antibiotics susceptibility were performed.

All \textit{Staphylococcus aureus} that grew were subjected to Oxacillin and then PCR for detection of mecA gene which encodes for resistance.

\textbf{Results:} Out of 218 specimens cultured, 71 (32.6\%) grew \textit{S. aureus} and thirty three (46.5\%) of the 71 were MRSA confirmed by presence of Meca gene which encodes for resistance.
S. aureus showed highest sensitivity to Vancomycin and Linezolid followed by Amikacin. Resistance was high in the commonly used antibiotics.

**Conclusion:** MRSA is highly (46.5%) prevalent among the S. aureus isolated from nasal and tracheal aspirates in NICU and ICU paediatric patients at Kenyatta National Hospital, Nairobi-Kenya

---

**Abstract No. 10**

**PREVALENCE AND DETERMINANTS OF NEEDLE STICK INJURIES AT KENYATTA NATIONAL HOSPITAL, NAIROBI KENYA**

Anthony Mungai Wainaina

In Kenya, there is little information on Needlestick injuries. In Kenyatta National Hospital (KNH), information on needlestick injuries is not clear yet more than 50% of its workers are exposed to these dangerous but preventable injuries. This was a cross-sectional hospital-based study that investigated the occurrence, risk factors, reporting and prevention of needle stick injuries at KNH. Target population consisted of 2,073 medical staff, 1,242 medical trainees and 768 support staff, all exposed to needlestick injuries in the course of their work from whom a sample of 351 participants was randomly selected each category proportional to its size in the target population. Participation was voluntary and confidentiality ensured. Approval from KNH Ethics & Research Committee was sought and granted. Data collection tools were self-administered questionnaires and observation checklists. Data was recorded and descriptive statistics determined. Multivariate logistic regression analysis was used at 95% confidence interval using SPSS statistical package. This study found that needlestick injuries are a reality at KNH with those who have ever sustained NSIs at 38.0% NSIs and those who have sustained NSIs in the 12 months at 14.5%. Jerking during injection, slipping of the syringe off the hand and recapping were reported as occurrences that led to the NSIs at 26%, 20.3% and 18.7% respectively. Occupation of a health worker was associated to ever suffering needle stick injuries (p=0.015) as well as reporting the injury (p<0.001). Doctors were found to be the most at risk. Education level influenced the incidences of needle stick injuries (p<0.001). Only 50.4% of the respondents reported the injuries immediately while 35% did not. Majority of the respondents (96.6%) knew that needlestick injuries can be prevented.
Knowledge on HIV status of the source patient was not significantly associated with reporting of needlestick injuries. Only 62.9% of the respondents were fully immunised against Hepatitis B. Study results provide information that can be used to improve surveillance against needlestick injuries in the hospital and compliance to needlestick prevention measures in the hospital.

**Abstract No. 11**

**PHYTOCHEMICAL COMPOSITION, ANTIOXIDANT AND ANTITUMOR EFFECTS OF EXTRACT FROM DRUM STICK (MORINGA OLEIFERA) AND QUININE TREE (RAUWOLFA CAFFRA)**

Milugo Trizah Koyi, University of Nairobi

*Moringa oleifera* and *Rauwolfia caffra* are herbs used as a medicinal plant by some communities in Kenya to manage oxidative stress related diseases such as tumors and heart diseases. This study sought to investigate the anticancer activity of *M. oleifera* and *R. caffra* against human Hepatocellular carcinoma (Hep-G2), Rhabdomyosarcomas (RD) and Vero cell lines. The level of antioxidant activity in the extracts was also established and the associated phytochemicals identified using multiple tests.

The anticancer activity was assessed using crystal violet assay while antioxidant activity was investigated using DPPH scavenging method. *R. caffra* was found to be a strong antioxidant with its stem bark extract having an activity comparable to the standard quercetin (*R. caffra* = 79.7% ±1.9; quercetin = 82.6% ± 2.0). In contrast, *M. oleifera* had a lower antioxidant activity (55.63 ± 2.00) but it demonstrated a strong anti-proliferative activity against Hep-G2 and RD cell lines. *R. caffra* was found to be rich in alkaloids, terpenoids, steroids, saponins and cardiac glycosides while *M. oleifera* extract had abundant levels of phenols, tannins, coumarins, flavonoids and cardiac glycosides.

The results also revealed a possible antagonistic effect in two phytochemicals: co-occurrence of alkaloids and saponins significantly reduced antioxidant activity (alkaloids only = 63%; alkaloids plus saponins = 15%). Optimum activity was observed for a combination of steroids, terpenoids and cardiac glycosides, but without alkaloids (82%). For pharmaceutical purposes the data suggests that alkaloids and saponins should be exclusive to each other in drug formulations.
The presence of cardiac glycosides might explain its use in traditional management of heart diseases hence it is possible that indigenous knowledge is validated in this study.

Hepatocellular carcinoma (Hep-G2), Rhabdomyosarcoma (RD)

Abstract No. 13

AN EVALUATION OF ACUTE PAIN MANAGEMENT ON POSTOPERATIVE PATIENTS IN SURGICAL, OBSTETRICS AND PRIVATE WING WARDS IN KENYATTA NATIONAL HOSPITAL (KNH)

Peninah Gikore, Esther Munyoro

Kenyatta National Hospital

Despite major advances in the knowledge and development of efficient techniques for pain control, many patients still suffer from modest to severe pain following surgery. Indeed, a pain audit conducted at KNH (2006) revealed that up to 13% of the postsurgical patients complained of severe acute pain. Acute postoperative pain is known to cause delayed mobilization of surgical patients resulting to prolonged hospital stay and impacting negatively on the national economy. Advantages of effective post-operative pain management include patient’s comfort hence satisfaction, earlier mobilization, fewer cardiac and pulmonary complications, reduced risk of There is need to carry out a study to assess the magnitude of postoperative pain, the analgesics in use and their effectiveness, and the level of patient satisfaction with the pain-care given at Kenyatta National hospital. This study was carried out to assess the above parameters. Findings from this study will be used to inform and influence acute pain management in the institution.

Objectives

• To determine the mode of analgesia used perioperatively at KNH
• To determine effectiveness of pain control achieved on postoperative patients
• To assess patients’ satisfaction with pain care given post operatively
Methods: Patients above 15 years of age from the respective units were recruited after informed consent was obtained. A standardized questionnaire was used to record patient’s details which included sociodemographic, and past/present medical details. Patients were followed into the operating room and the type of anaesthesia used was noted plus intraoperative analgesia administered. In the postoperative care unit (PACU), pain control achieved was noted at time zero, 30min and 60min post-surgery. In the wards patients were followed up on the 1st and 2nd postoperative days and pain control achieved and patient’s satisfaction to services offered were noted. Acute pain assessment was done using the verbal rating scale.

Abstract No. 14

AN IN VITRO STUDY ON THE OXYTOCIC ACTION OF ADENIA GLOBOSA ENGL

Kipruto A. Sinei, Julius W. Mwangi, Rahab W. Munenge Mr. Amos M. Mwaura.

University of Nairobi

Objectives: The objectives of the study was to investigate the effect of the water extract of Adenia globosa on the isolated preparation of the rat uterus and how this could be affected by well known uterine stimulants such as ergometrine and prostaglandin F2α. and also by antagonists of acetylcholine and adrenaline.

Setting: Department of Pharmacology and Pharmacognosy Laboratory, School of Pharmacy, University of Nairobi, KNH Campus

Study Design: It was a laboratory based study. The crude extract and the other drugs were tested on isolated rat uterus set up in an organ bath under the usual laboratory conditions.

Results: The results obtained showed that the plant extract caused a dose-dependent contraction of the rat uterus which was not antagonized by atropine nor phenoxybenzamine. The contractile effect was however potentiated by small doses of ergometrine and prostaglandin F2α.

Conclusions: It was concluded from these observations that the contractile action was not mediated through cholinergic nor adrenergic system. Secondly, it was postulated that since prostaglandin F2α is also released at the time of labour,
the potentiatory action probably occurs in vivo when the plant preparation is given to domestic animals to ease and speed up the process of giving birth as claimed in the traditional use of this plant.

Abstract No. 15

MAGNITUDE OF EARLY SEXUAL DEBUT AND ITS CORRELATES AMONG COLLEGE YOUTH OF GAMBELLA TOWN, SOUTH WESTERN ETHIOPIA

Tiglalem Alemu¹, Tefera Belachew², Muluemebet Abera²

¹Gambella Health Science College, Ethiopia
²Jimma University, Ethiopia

Background: Early sexual debut increases young peoples’ risk for infection with HIV and other STIs. Youth who begin early sexual activity are more likely to have high-risk sex or multiple partners and are less likely to use condoms. It is crucial to understand the magnitude and its correlate of early sexual initiation in a broader context for designing and implementing effective interventions targeting youth.

Objective: The objective of this study was to determine Magnitude of early sexual debut and associated factors among youth in two colleges age 15-24 years in Gambella Town, Gambella Region, South-West Ethiopia.

Methods: A Cross-sectional study involving both qualitative and quantitative data collection methods were carried out in two colleges of Gambella regional state from March 10 to 15, 2011. Simple random sampling technique was used to get the desired sample size of 379 students. The qualitative data were also collected and analyzed in order to triangulate the findings. Bivariate and multivariate logistic regression analyses were performed.

Result: Two hundred fifty four (67%) of surveyed youth have ever had sex. In this study 161(63.38%) of youth started their sexual intercourse before age of 18. Multivariate analysis showed that being female by gender (AOR [95% CI] = 4.89 [1.02, 6.13]), peer pressure (AOR [95% CI] = 4.03 [1.17, 13.79]), watching pornographic materials (AOR [95% CI] = 5.10 [1.88, 13.86]) and being less connected with parents (AOR [95% CI] = 3.10 [1.35, 5.67]) were associated with early sexual initiation.
Conclusion and recommendation: The prevalence of early sexual initiation was high among youth in two colleges. Delaying sexual debut can be achieved through well designed sexual education programs at earlier life. In addition, ways to access condoms and other contraceptives to college youth should be sought for those who already initiate sexual intercourse. (Not from the study)

Key words: Early sexual debut, College students, Gambella region

Abstract No. 16

UROLOGICAL COMPLICATIONS AND IMPACT ON QUALITY OF LIFE AMONG PATIENTS WITH CERVICAL CANCER AT KENYATTANATIONAL HOSPITAL

Faiza  Nassir¹, Samson Wanjala¹, Frank Kagema² Erastus Njeru³

¹Department of Obstetrics&Gynecology, UoN,
²Department of Reproductive Health KNH
³School of Public Health, UON

Cervical cancer whose main etiology is HPV remains a major health issue globally especially in the developing world. About 270,000 women die annually due to cervical cancer; 88% of them in low income settings. In Kenya, it is the second common cancer after breast cancer in women, with an estimated incidence of 2,454 per 100,000 and a leading cause of death due to gynecological malignancy. Urologic complications—which include urinary tract infections, VVF, ureteric obstruction, stress and urge incontinence, hydronephrosis, and renal failure are very common in cervical cancer patients. They increase the morbidity and mortality in women and negatively impact their quality of life.

Materials and Methods: A descriptive, cross sectional study involving 239 cervical cancer patients was conducted at Kenyatta National Hospital (KNH) between May and August 2012. A structured questionnaire aimed at understanding the burden of the urological complications, its associated factors and impact on quality of life was administered.
**Results:** A total of 239 participants were interviewed. The prevalence of urological complications was 78%. The urological conditions included; UTI (55.1%), Urge incontinence (42.7%), Cystitis (37.2%), Hydronephrosis (37%) stress incontinence (26.8%), urinary retention (20.1%), hematuria (12.6%) and VVF (10%).

There was a strong association between cancer staging and UTI (p=0.002). High parity (>3) was associated with development of stress incontinence (p=0.06). The median for the urinary distress inventory and incontinence impact questionnaire was 21.875 and 4.17 respectively.

**Conclusion:** There is a high prevalence of urological complications. Clinicians should routinely ask the patients on urological symptoms.

**Keywords:** Cervical Cancer, Urological complications; Quality of Life

---

### Abstract No. 17

**FACTORS ASSOCIATED WITH RISKY SEXUAL BEHAVIOR PRACTICES AMONG HIV NEGATIVE PARTNERS IN HIV DISCORDANT RELATIONSHIPS IN NAIROBI, KENYA**

Nelly Muturi¹, Gideon Kikuvi¹, Richard Gichuki³ Joshua Kimani³ and Elijah Songok¹²³

¹Institute of Tropical Medicine and Infectious Diseases (ITROMID), Jomo Kenyatta University of Agriculture and Technology,  
²Kenya Medical Research Institute,  
³University of Nairobi/University of Manitoba HIV/AIDS Collaborative Program.

**Background:** The HIV negative partners in HIV discordant relationships are at a 10% annual risk of acquiring HIV. Whereas sexual behavior influences HIV acquisition, little information is available on risk taking practices among negative partners in HIV discordant relationships in our settings. The main objective of this study was to determine the risky sexual behavior practices among HIV negative partners in HIV discordant relationships enrolled at the Prevention with Positives program at the Pumwani Maternity Hospital Comprehensive Care Clinic managed by the University of Manitoba/ Nairobi collaborative research group.
Methods: This study was a cross-sectional descriptive study carried out between the months of February and November 2011. A total of 133 HIV negative partners in discordant relationships participated in this study.

Results: Out of the 133 participants, 89 (66.9%) were male and 44 (33.1%) were female. The median age of the study participants was 38 years and the median duration of the HIV discordant relationship was 8 years. Overall, 44.4% of the study participants reported inconsistent condom use, 14.3% reported having another sexual partner outside the relationship and 30% reported ever engaging in sex activities when drunk. Monthly earnings (p- 0.02), alcohol use (p- 0.03) and the index partner being on anti-retroviral medication (p-0.02) were significantly associated with having another sexual partner. Monthly earnings (p-0.03) and gender (p-0.001) were significantly associated with having sex when drunk. None of the selected factors was significantly associated with inconsistent condom use (p->0.05). Findings from the focus group discussion showed that male gender, alcohol use and the duration of the relationship influence the decision to use condoms while male gender was reported to influence the number of sexual partners among the discordant partners in HIV discordant relationships.

Conclusion: Risky sexual behaviors practices still occur among the HIV negative partners in discordant relationships. More education and sensitization should be made to the HIV discordant partner on the risks associated with this risky sexual behavior so as to reduce the risk of HIV infection from their index partners.

Abstract No. 20B

PILOT STUDY ON THE USE OF INTERNET SOCIAL NETWORK SITE AS A VEHICLE FOR MULTICENTER INJURY RESEARCH

Odhiambo A.Walter, Odira Francis, Simiyu Henry, Ndinya Florentius, Cassel Erin

Background: Interpersonal violence (IPV) and road traffic injuries (RTI) are the leading causes of injury globally. These injuries are largely preventable and thus the World Health Organization (WHO) has prioritized the need to generate reliable and consistent data in order to understand and define context in which these injuries occur so as to aid in developing preventive strategies. In developing countries like Kenya, one of the rapidly increasing causes of RTI is the Motor Cycle (MC) crashes. MC has emerged in the recent past as a cheap and popular means of public transport. However, poor safety measures and lack
of rider training has led to an exponential increase in MC related injuries.

**Objective:** To pilot the use of internet social network site- facebook as a vehicle for concurrent multicenter MC injury study.

**Method:** The three month study was conducted concurrently in four hospitals in different parts of Kenya. There was weekly posting of data collected from each hospital in a restricted facebook group site.

**Results:** A total of 134 MC injuries were reported from the four study centers. The male to female ratio was 4:1. The youngest casualty was a 1 year old passenger while the eldest was a 70 year old pedestrian. There was significant variation in data from each of the study centers, but in general, 36% were riders, 31% pedestrians, 30% passengers while 3% involved non-motorized cyclists.

---

**Abstract No. 22**

**SAFETY AND CONTRACEPTIVE STUDIES OF UNIPRON**

Jael A. Obiero$^{1,5}$, Isaac Mulei$^2$, Idle O. Farah$^1$, Kavoo Linge$^{3,4}$, Walter Jaoko$^5$, Peter G. Mwethera$^1$

$^1$Department of Reproductive Health and Biology, Institute of Primate Research, Nairobi, Kenya  
$^2$Department of Veterinary pathology, University of Nairobi, Nairobi, Kenya  
$^3$Department of Obstetrics & Gynaecology, Nairobi Hospital, Nairobi, Kenya  
$^4$Department of Obstetrics & Gynaecology, University of Stellenbosch, Tygerberg, CapeTown, South Africa  
$^5$Department of Medical Microbiology, University of Nairobi-Kenyatta National Hospital, Nairobi, Kenya

**Introduction:** Two of the major challenges in reproductive health are the failure to reduce family size and acquisition of Sexually Transmitted Infections (STIs) including Human Immunodeficiency Virus (HIV). Limited availability of woman-initiated non-hormonal contraceptive programmes is a hindrance to successful contraceptive programmes in resource-constrained countries. In this study we assessed the safety of UniPron as a vaginal product and its effectiveness as a contraceptive in female olive baboons (Papio anubis).
**Objectives:**
(i) To evaluate the effect of UniPron on baboon vaginal pH and vaginal flora
(ii) To evaluate the effect of UniPron on blood chemistry profile of baboons
(iii) To evaluate the effect of UniPron on baboon vaginal and cervical epithelia
(iv) To determine the effectiveness of UniPron as contraceptive in a baboon

**Outcome measures:** Changes in baboon vaginal pH, vaginal flora, clinical chemistry profile and conception

**Results:** Baseline vaginal pH was 5.8±0.8. There was no significant difference in the vaginal pH of Smugel treated animals compared to baseline (p>0.05). Similarly, analysis of blood chemistry parameters revealed no significant differences. The most frequently isolated microorganisms both at baseline and during treatment included *Corynebacterium glucuronolyticum*, *C. renale* group, *Lactococcus raffinolactis*, *Leuconostoc lactis*, *Lactobacillus acidophilus*, *L. fermentum*, *L. salivarius*, *Staphylococcus aureus*, *S. xylopus*, *S. hyicus*, *Aerococcus viridians*, *Escherichia coli* and *Candida albicans*.

No detectable histological changes were observed in the vaginal or cervical sections examined. During treatment intravaginally with UniPron no conception occurred in the Uni Pron treated animals, except when the treatment was stopped.

Conclusions and Recommendations: Unipron is safe as a vaginal product in baboons and is effective as a reversible contraceptive. Further studies should be conducted to assess the safety of UniPron as a vaginal product in women.

**Keywords:** UniPron, Safety, Contraceptive, *Papio anubis*

---

**Abstract No. 23**

**Dietary, Socio-economic and Demographic Factors Influencing Serum Zinc Levels of Pregnant Women at Naivasha Level 4 Hospital Nakuru County, Kenya**

Agnes Mitheko, Judith Kimiywe and Patrisio Njeru Njeru

**Background:** Zinc Deficiency (ZD) has been witnessed by several studies and associated to diverse pregnancy complications.
Despite availability of data to demonstrate widespread micronutrient deficiency in pregnancy, minimal studies have examined serum zinc status among pregnant women in Kenya. Hence the present study was undertaken.

**Objectives:** To determine serum zinc levels of pregnant women and to establish dietary, socio-economic and demographic factors associated with serum zinc levels of pregnant women in Naivasha.

**Methodology and study design:** A cross sectional study design was conducted on 172 pregnant women applying systematic random sampling method to obtain the sample size. Serum zinc levels were analyzed by atomic absorption spectrophotometer. A structured questionnaire was used to obtain socio and demographic factors amongst the women. Dietary intake was assessed using 24-hr dietary recall and FFQ method. Statistical analysis was done using logistic regression and linear regression.

**Results:** Mean serum zinc level was 66 μg/dl (+ 14 SD) ranging between 39 to 123 μg/dl. About 66.9% of the subjects were Zinc deficient. 75.0% of the participants were in low socio-economic class. Dietary zinc intake was not associated with ZD, but women consuming Vitamin C below RDA had 2.62-fold risk (95% CI: 0.55 – 12.37) of becoming ZD.

Parity was significantly associated with ZD (AOR=3.65; 95% CI: 1.27 – 10.49; p=0.016). A p value of < 0.05 statistical significant at 95% confidence level was used.

**Conclusions:** ZD is of public health concern in the area. The high prevalence of ZD (66.9%) found was possibly due to high consumption of cereals, carbohydrates and legumes, which are high in zinc inhibitors.

**Recommendations:** The problem may be addressed through a combination of short, medium and long term strategies. This includes nutrition education, household based phytate reduction food processing techniques, economic empowerment and livelihood promotion.

**Keywords:** Zinc deficiency, Serum zinc concentration
The demographic and clinical characteristics of children diagnosed with rickets who presented to MSF clinics from informal settlement of Kibera, Nairobi, Kenya.


Objectives: In primary health care clinics run by Médecins Sans Frontières in the informal settlement of Kibera, Nairobi, we describe the demographic and clinical characteristics of children with rickets from September 2012 to June 2013.

Methods: In September 2012 a diagnostic and treatment protocol for identification and management of rickets in children was implemented. Demographic and clinical data were routinely collected on each child diagnosed with rickets. Children were started on vitamin D and calcium supplementation, unless provided in nutritional supplements given for concurrent malnutrition.

Results: Between September 2012 and April 2013, 51 children were diagnosed with rickets. There were 29 males and 22 females with a mean age of enrollment of 14.5 months. The mean weight at intake for males and females was 8.1 kg and 7.7 kg, respectively. The frequency of continued breast feeding at intake was 66.7%, the frequency of supplemental feeding (with water, tea or porridge) was 49.0% and the average age of supplemental feeding beginning was 5.6 months. Sun light exposure was less than or equal to 1-3 hours per week in 50% of reporting cases, while 21.6% used local daycare. There were 25.5% of children with a weight-height z-score less than -2. On clinical exam 70% of children were found with wrist swelling, 68.6% with frontal skull bossing and 56.9% with rachitic changes of the ribs.

Conclusions: A subset of children living in Kibera are at increased risk to develop rickets with the characteristics of prolonged breast feeding, low sun light exposure and early supplemental feeding with low vitamin D source foods.
Abstract No. 26

EFFECTIVENESS OF PMTCT AT NAIVASHA DISTRICT HOSPITAL: OUTCOMES OF HIV EXPOSED INFANTS

Kamau Emily

**Background:** Effective Prevention of Mother-to-Child Transmission of HIV/AIDS program can reduce Mother-to-child transmission to as little as 2%.

**Objectives:** Primary Objectives:
1. To determine 18 month HIV status among HIV exposed infants of women enrolled into Naivasha District PMTCT programme
2. To determine 18 month HIV free survival status among HIV exposed infants of women enrolled into Naivasha District Hospital PMTCT programme

**Secondary Objectives:**
1. To describe infant HIV testing practices among HIV exposed infants of women enrolled in Naivasha District Hospital PMTCT programme
2. To describe causes of mortality for deceased infants of women enrolled into Naivasha District PMTCT programme

**Methodology:** Retrospective cohort study targeting mother-infant pairs seeking HIV care at the comprehensive care clinic. Consenting mothers completed a questionnaire assessing socio-demographics and uptake of PMTCT interventions. Infant HIV status was obtained from records and HIV antibody testing performed for previously untested infants. HIV transmission rates and mortality rates among HIV exposed infants were estimated. Kaplan Meier analysis was used to determine HIV free survival.

**Results:** One hundred and thirteen mother-infant pairs were enrolled, 99 (87.7%) mothers and 85 (92%) infants received antiretrovirals. Most 100 (88.5%) infants had HIV deoxyribonucleic acid polymerase chain reaction testing at 6 weeks, 84 (80.8%) had follow up HIV antibody testing at 18 months. Highest HIV testing rates at 9 months at 90.4%. MTCT rate was 2.7% at 6 weeks and 4.4% between 6 weeks and 18 months. 18 month HIV-free survival was 83.9% with an 8% mortality rate. Causes of mortality were pneumonia, gastroenteritis, neonatal sepsis and cardiac failure.

**Conclusion:** Overall MTCT rate is 7.1% with 18 months HIV free survival and mortality rate of 83.9% and 8% respectively. ARV usage among mother-infant pairs fall below national targets of 90%.
CHILD MARRIAGE; A CULTURAL HEALTH PHENOMENON

Birechi J.

Child marriage continues to be a challenge worldwide and especially in southern Asia and Africa. While it affects both sexes, girls are more affected as they are the majority of the victims. It is predicted by the UNFPA that worldwide 100 million girls (indicate age of girls) are expected to marry in the next decade (UNICEF 2005). Child marriage causes untold suffering to the victims. It curtails the child’s education, affects the general health and puts the affected in a disadvantaged position.

In Africa, child marriage account for 42% (UNICEF 2005). The author of this paper argues that culture continues to perpetuate and entrench the practice of child marriage in most communities. Culture refers to a way of life of members of a society or groups within a society. It includes how they dress, their marriage customs and family life, their patterns of work, religious ceremonies and leisure pursuits (Giddens, 2001). Culture and health are closely related. All communities are united by the fact that members are organized in structural social relationships according to a unique culture.

The elements of culture such as marriage customs, religion among others are shared by members of a community and allow communication and cooperation to take place. It forms the context in which individuals in a community live their lives. Child marriage remains strong in certain communities as a way of life. The more they try to stop the practice, the more they feel alienated. This paper discusses the cultural factors behind the practice of child marriage such as bridewealth, value of virginity among others.

It will also examine the health implications on the life of the children as well as the strategies being put in place by various stakeholders in order to end the practice. The paper recommends that the communities should be actively involved in coming up with the ways of ending the practice. A lot of awareness should be created on the negative implications of child marriage on the health of the children and their general wellbeing.

Key words: Child marriage, Culture, Health
Abstract No. 28

PRE-SCREENING AND ‘BANKING’ PARTICIPANTS FOR CLINICAL RESEARCH – EXPERIENCE FROM KENYA AIDS VACCINE INITIATIVE (KAVI)

G Omosa-Manyonyi, H Ogutu, R Malogo, G Mutua, D Nyasani, R Sajabi, R Mahira, G Ouattara, E Mutisya, A Maina, J Nyange, J Wairimu, M Muriuki, L Lunani, R Ndambuki

Introduction: Participation in clinical research is a voluntary exercise whereby a participant makes an informed choice to join a study. Clinical trials are robust experiments that require efficiency. HIV vaccine clinical trials pose a special challenge due to the associated stigma and misconceptions. Participant recruitment into HIV vaccine clinical trials therefore requires special attention to the informed consent process resulting in slow participant recruitment rate. To address this, KAVI designed a study aimed at ‘banking’ participants for potential participation in future studies at KAVI.

Methods: Following informed consent a questionnaire was administered to obtain information on demographics, lifestyle, medical history and willingness to receive information about upcoming studies. VCT was offered and blood drawn for HIV testing and storage. HIV infected participants were excluded and referred for care. Follow-up was scheduled six-monthly for 2 years; HIV counseling and testing were repeated at follow-up visits. Participants that consented to roll-over into new recruiting studies were discontinued from the ‘banking’ study.

Results: A total of 336 participants were screened and 306 enrolled with a male: female ratio of about 1:1.2. Majority were young (25-29 years), single (77%), and unemployed or students. Most described their health as good (71%), were heterosexual (92%) and sexually active (78%); 49% and 10% had one or no sexual partner respectively. Condom use was high (regular partner 81%, casual partners 86%); 88% believed that they were HIV-uninfected. A total of 77 participants (23%) consented and rolled over to new studies, 50 of these consented for 2 HIV vaccine clinical trials that required 80 participants.
Conclusion: Pre-screening and ‘banking’ participants for future studies can supplement direct recruitment from the community and increase recruitment efficiency, reduce recruitment effort, and improve participant retention and compliance with procedures. There is need for further studies to understand the participants’ decision-making process in volunteering for clinical research.

Abstract No. 29

SELF-REPORTED USE OF INTERNET BY CERVICAL CANCER CLIENTS IN TWO NATIONAL REFERRAL HOSPITALS IN KENYA

Lucy W. Kivuti-Bitok¹, Geoff McDonnell², G.P Pokhariyal³, Abdul V. Roundsari⁴

¹School of Nursing Sciences, University of Nairobi
²Centre for Health Informatics, University of New South Wales
³School of Mathematics, University of Nairobi
⁴Department of Health Information Science, University of Victoria University of Victoria

Background: This paper is based on part of a wider study which aimed at developing a systems Dynamic model for evaluating the impact of use e-health tools in cervical cancer Management in Kenya. Cervical cancer remains a devastating disease in Kenya accounting for more than 2000 deaths each year. Lack of information on cervical cancer prevention and management has been attributed to the apathy among women in seeking health interventions. Use of internet-based and mobile e-health tools could increase information access among cervical cancer patients.

The objective of the study: was to establish the extent of mobile phones and internet use by cervical cancer clients; find out the characteristics of patients associated with internet use and identify barriers faced in internet use.

Method: A cross sectional descriptive survey of 199 cervical patients visiting the two main referral hospitals in Kenya (Kenyatta National Hospital and Moi Teaching and Referral Hospital). A structured questionnaire was used to collect data.
Findings: The average length of illness was 2.43 years (SD ± 3.0). Only 7.5% (n=15) reported to having used the internet as a source of information. 92.5% (n=184) did not use internet. With Multiple options, 70.9% did not know how to use a computer, 29.2% did not have access to a computer, 14.6% lacked the money to use computers at the local cyber cafe while other barriers identified accounted for 11.1%. Patients reported that the internet had an important role in the management of cancer of the cervix in health education (17.6%), online consultation (14.6%), booking of patients (13.6%), referrals (8.5%) and collecting data (7%). The 96% of the respondents who had access to a mobile phone, recommended mobile phones for health education messages (31.7%), reminder alerts for medication (29.7%) and booking appointments (21.6%). There was a statistically significant association between income of the patients and internet use (p = 0.026) in this study.

Conclusions: There is low level use of the internet by cervical cancer clients attended in Public referral facilities in Kenya. The main barriers identified were lack of knowledge on how to use computers and lack of access to a computer. High level of access to mobile phones was reported. This is an indicator of great potential for use of mobile phones in the management of cervical cancer through short messaging services (sms), without internet connectivity. There is even greater potential to internet use through web access via mobile phones.

Key words: Internet use, cervical cancer, e-health, mobile phones, Kenya

Abstract No. 30

AN EXPLORATION OF OPPORTUNITIES AND CHALLENGES FACING CERVICAL CANCER MANAGERS IN KENYA

Lucy W Kivuti-Bitok¹, Ganesh P Pokhariyal², Roudsari Abdul³ and Geoff McDonnell⁴

¹School of Nursing Sciences, University of Nairobi
²School of Mathematics, University of Nairobi
³Health and Information Science, University of Victoria
⁴Centre of Health Informatics, New South Wales

Background: Kenya like other developing countries is low in resource setting and is facing a number of challenges in the management of cervical cancer.
Objective: This study documents opportunities and challenges encountered in managing cervical cancer from the health care workers’ perspectives.

Methods: Pretest of qualitative study was done at the Nairobi Hospice. The qualitative study was done among cervical cancer managers who were defined as nurse managers and doctors involved in operational level management of cervical cancer. The respondents were drawn from four provincial hospitals and the only two main National public referral hospitals in Kenya. Twenty one [21] nurse managers and twelve [12] medical doctors were interviewed using a standardized interview guide. The responses were audio recorded.

Data Analysis: The recorded interviews were transcribed verbatim and the content analyzed in emerging themes.

Results: Four themes of challenges were identified. Patient related challenges included a large number of patients, presenting in the late stage of disease, low levels of knowledge on cancer of the cervix, low levels of screening and a poor attitude towards screening procedure. Individual health care providers identified a lack of specialised training, difficulty in disclosure of diagnosis to patients, a poor attitude towards cervical cancer screening procedure and a poor attitude towards cervical cancer patients. Health facilities were lacking in infrastructure and medical supplies. Some managers felt ill-equipped in technological skills while the majority lacked access to the internet. Mobile phones were identified as having great potential for improving the management of cervical cancer in Kenya.

Conclusion: Kenya faces a myriad of challenges in the management of cervical cancer. The peculiar negative attitude towards screening procedure and the negative attitude of some managers towards cervical cancer patients need urgent attention. The potential use of mobile phones in cervical cancer management should be explored.
Abstract No. 31

PREVALENCE AND SHORT-TERM OUTCOMES OF ACUTE KIDNEY INJURY IN TERM NEONATES WITH MODERATE TO SEVERE PERINATAL ASPHYXIA AT THE KENYATTA NATIONAL HOSPITAL NEWBORN UNIT

Alaro D, Musoke R, Bashir A, Wainaina L

Department of Paediatrics and Child Health, University of Nairobi

Background: The kidney is the most damaged organ in asphyxiated full-term infants. The severity of its damage is correlated with the severity of neurological damage. We determined the prevalence and short term outcomes of perinatal asphyxia-associated acute kidney injury (AKI).

Methods: We conducted a prospective cohort study including 60 full-term neonates admitted at the Kenyatta National Hospital newborn unit in Nairobi with hypoxic ischaemic encephalopathy (HIE) from 1st June 2012 to 30th November 2012. Renal function was assessed by measuring serum creatinine on day 3 of life. AKI was defined by a level of creatinine above 133 µmol/l. The degree of neurological impairment was determined according to Sarnat classification daily until patient discharge, death or day 7 of life.

Results: Only 60 infants met the inclusion criteria with 36.2% having HIE I, 51.7% HIE II and 12.1% HIE III. The prevalence of AKI was 11.7% with 11.1% of the males affected versus 12.5% of the females. There was a 15-fold increase risk of developing AKI in HIE III versus HIE I, p=0.034 with 95% CI (1.2-183.6). Mortality rate in perinatal asphyxia associated AKI was 71.4% with a 24-fold increase risk of death in neonates with AKI, p=0.001 with 95% CI (3.7-157). Median day of death in neonates with AKI was 4.5 days.

Conclusions: AKI is common and associated with poorer outcomes in the background of moderate and severe perinatal asphyxia. AKI correlates well with the severity of HIE. Larger studies need to be done to correlate maternal factors and perinatal asphyxia-associated AKI.
FREE FIBULA FLAPS UNDER LOUPE MAGNIFICATION; A VIABLE OPTION FOR RECONSTRUCTION OF BONY DEFECTS IN A RESOURCE CONSTRAINED ENVIRONMENT

Nangole Wanjala F¹, Khainga S O¹, Kahoro L²

¹Dept of Surgery, University of Nairobi,
²Dept of Surgery, Kenyatta National Hospital

Reconstruction of bony defects either posttraumatic or secondary to tumour surgery can be challenging and demanding. Extensive bony defects are best managed by free flaps. In many centers in the developed world this is done by the aid of microscopes. However in many developing countries especially in sub-Saharan Africa Microscopes are not readily available.

In this presentation we present our experience with the use of loupes in doing free fibula flaps at Kenyatta National Hospital; a tertiary public hospital in Kenya. A total of fifteen patients with extensive bony defects requiring reconstruction were followed in this study. Thirteen patients needed reconstruction of the mandible with one patient the radius and one the tibia. The overall flap success rate was about ninety percent.

In conclusion, even in centers where microscopes are not readily available, successful reconstruction of extensive bony defects can be achieved by the use of loupe magnifications. Loupes are easily portable, cheap and can thus be assembled even in the most remote of all places. Fibula has a relatively big caliber pedicle of about 2millimetre in diameter. This large size pedicle allows for the relatively ease of anastomosis with the loupes.
Abstract No. 33

FLAPS IN RECONSTRUCTING LEG DEFECTS: OUR EXPERIENCE AT KENYATTA NATIONAL HOSPITAL

Nangole W F, Mogire T, Khainga S O

University of Nairobi, Kenya

Wounds of the leg requiring reconstruction with flaps can be a challenge to even the experienced plastic and reconstructive surgeons. While the reconstructive ladder provides a clear roadmap on handling such defects, local factors including the experience of the surgeons and the resources at hand determines which flaps could be carried out successfully.

In this presentation, we share our experience at Kenyatta national hospital, a tertiary hospital in Kenya. This is a retrospective study of patients operated on with the authors between August 2008 and August 2012 with leg wounds requiring flaps to close. A total of fifty six patients were operated on with such defects. Mid third tibia accounted for up to 44 percent of the defects. Perforator flaps was the commonest flap performed (31 percent) followed by the soleus muscle flap. The overall flap success rate was 92 percent.

In conclusion, majority of lower limb defects as shown in this study can be successfully reconstructed with the use of local and regional flaps. The cross leg flap, despite its disadvantage still has a role in the management of a significant proportion of such wounds in our set up. However more efforts should be put in place so as to utilize free flaps since they may result in better functional and less donor site morbidity.

Abstract No. 37

PITUITARY SURGERY AT THE KENYATTA NATIONAL HOSPITAL

Kitunguu PK, Kiboi JG Musau CK, Mwang’ombe NJM

Division of Neurosurgery, University of Nairobi, Kenya

Introduction: Surgical extirpation of pituitary lesions and can be performed by craniotomy or trans-sphenoidal approaches. This could be for pituitary ablation, excision of pituitary adenomas, craniopharyngiomas, suprasellar meningiomas and other types of tumors of the sellar region.
Despite this being a common neurosurgical procedure there is a paucity of data on the local Kenyan experience and outcomes following pituitary surgery.

**Study Design and Site:** A retrospective study at the Kenyatta National Teaching and Referral Hospital, Nairobi.

**Objectives:** To evaluate the clinical presentation, management and outcome of patients undergoing surgery for pituitary lesions at the Kenyatta National Hospital.

**Patients and Methods:** Following ethical approval, patients’ records were retrieved and assessed for clinical and radiologic features of pituitary lesions, surgical treatment and post operative outcome. All the data was coded and analysed using Statistical Package for Social Sciences (SPSS) version 16.0. Frequencies and means were computed for description of the various variables and the association between categorical variables calculated using Chi-square test while comparison of mean values was performed using the one-way analysis of variance test (ANOVA).

**Results:** A total of 65 patients were included with 39 (60%) female and 26 (40%) male patients. The mean age was 36.88 years (+ 14.689) and majority of the patients (55%) were aged between 26 and 45 years. The most common presentation were visual disturbances reported by 57 (87.7%) of the patients having reduction in visual acuity, while 37 (56.9%) had bitemporal hemianopia. Amenorrhea and primary infertility were reported by 11 (16.9%) patients while 14 (21.5%) and 8 (12.3%) had galactorrhea and gynecomastia respectively. Ten patients (15.4%) had acromegalic features of hypergnathia and acral enlargement of hands and feet. Sixty two (95.4%) patients were operated during the study period and of these 28 (45.2%) by the transphenoidal approach as opposed to 34 (54.85%) by craniotomy. The pterional trans-sylvian approach was the most common of the transcranial hypophysectomies accounting for 17 (50%) patients, while 15 patients (44.1%) were operated by the subfrontal approach and two patients were operated via midline inter-hemispheric approach.
Majority (96.4%) of trans-sphenoidal hypophysectomies were by sub-labial incision. Fifty (76.9%) of the patients had good functional outcome while 11 (16.9%) and 4 (6.2%) suffered moderate and severe disability respectively. Patients’ age (p=0.0029), duration of symptoms prior to surgery (p=0.0018) and surgical management versus conservative (p=0.001) significantly affected patient outcome. There was no statistically significant difference in outcome between patients of different sex (p=0.058) or the type of operation performed (p=0.191).

**Conclusion:** Transsphenoidal and trans-cranial approaches are effective and safe treatment strategies for pituitary lesions with low morbidity, mortality and recurrence rates. With the paradigm shift towards more trans-sphenoidal and particularly endonasal approaches, additional prospective studies are required to assess clinical and endocrinological outcomes.

**Key Words:** Pituitary tumors, Trans-sphenoidal, Hypophysectomy, Craniotomy

---

**Abstract No. 38**

**PREDICTORS OF FUNCTIONAL RECOVERY IN AFRICAN PATIENTS WITH TRAUMATIC INTRACRANIAL HEMATOMAS**

Kitunguu PK¹, Kiboi JG¹, Angwenyi P², Shiundu S², Mwang’ombe NJM¹.

¹Department of Neurosurgery, University of Nairobi, and Kenyatta National Hospital, Nairobi, Kenya

**Background:** Head injury is a critical public health problem responsible for up to 50% of fatalities among trauma patients and for a large component of continuing care among survivors. Intracranial hematomas are among the most common clinical entities encountered by any neurosurgical service and have a very high mortality rate and poor prognosis among traumatic brain injuries.

**Objective:** The purpose of this study was to investigate reliable factors influencing the functional outcome of the patients with traumatic intracranial hematomas (ICHs).

**Methods:** A retrospective analysis was conducted of consecutive patients presenting at the Kenyatta National Hospital between January 2000 and December 2009. Following ethical approval, the records of patients admitted to the neurosurgical unit and diagnosed with traumatic ICH were retrieved and...
reviewed. The outcome measure was the Glasgow Outcome Scale (GOS) score at discharge.
Data were collected in preformed questionnaires, and the coding and analysis were carried out using SPSS, version 11.5.

**Results:** Of the 608 patients diagnosed with intracranial hematomas during the study period, there was a clear male predominance, with 89.3% male and 10.7% female patients. Majority of the patients (49%) were aged between 26 and 45 years, whereas 5.6% and 9.4% were younger than age 13 years and older than age 61 years, respectively.

The most common cause of injury was assault (48%). Good functional recovery was achieved by 280 (46.1%) of the patients in our series, whereas moderate and severe disability accounted for 27% and 6.9%, respectively. Males were more likely to have functional recovery (46.4%) than were females (43.1%), though this finding was not statistically significant (P= 0.069). The proportion of patients who achieved functional recovery seemed to decrease with increasing age. Patients who were involved in motor vehicle accidents were less likely to have functional recovery (33.7%, P= 0.003) than those who fell (53.6%).

There was a statistically significant difference in the proportion of patients who achieved functional recovery, with 65.2% of those who had mild head injury as compared to 46% and 15.1% (P < 0.001) for those with moderate and severe head injury, respectively. Patients who had surgical intervention were more likely to achieve functional outcome (51.2%) as compared to 31.7% in those managed conservatively. Furthermore, the time elapsed from initial trauma to surgery significantly influenced outcome. The type of

**Conclusion:** An increased risk of poor outcome occurs in patients who are older than age 61 years, have lower preoperative GCS scores, pupillary abnormalities, and a long interval between trauma and decompression. The findings would help clinicians determine management criteria and improve survival.
Abstract No. 39

MANAGEMENT AND OUTCOMES OF EXTRADURAL HAEMATOMAS AT KENYATTA NATIONAL HOSPITAL

Nganga HK, Kitunguu PK, Mbuthia JM, Kiboi JG, Mwang’ombe NJM

Department of Neurosurgery, University of Nairobi

Background: Extradural hematoma is a true neurosurgical emergency and remains among the most common causes of mortality and disability resulting from traumatic brain injury. The purpose of this study was to evaluate the current management and factors that influence outcome in patients treated for extradural hematoma in an African setting.

Methods: A total of 224 consecutive patients who were admitted to the neurosurgical unit at the Kenyatta National Hospital and diagnosed with extradural hematoma between January 2007 and December 2011 were included in this study.

Results: There was a clear male predominance of 96.9%. The median age was 29 years. The most common cause of injury was assault (45%). Good functional recovery was achieved by 190(86.2%) of the patients in our series, whereas residual disability accounted for 6.7% and mortality for 7.1%. The proportion of patients who achieved functional recovery significantly decreased with increasing age (p=0.011). A lower GCS score at admission was associated with a poorer outcome (p=0.032). The time elapsed from initial trauma to surgery significantly influenced outcome (p=0.007).

Conclusion: A longer duration between trauma and decompression, a low preoperative GCS score, pupillary abnormalities and those older than age 61 are prognostic indicators of an increased risk of poor outcome.
NEUROEPIDEMIOLOGY OF HEAD INJURIES IN KENYA

NJM Mwang’ombe, S V Shitsama

Traumatic brain injury (TBI) not only has considerable morbidity and mortality but is a major cause of disability, epilepsy and dementia worldwide. In this review, results of studies conducted at the Kenyatta National Hospital, Nairobi, Kenya by the senior author between 1979 and 2009 are presented. These findings are discussed in two parts, those done between 1979 and 1985 (pre-CT scan period) and those done between 1999 and 2009 (CT scan period).

The overall mortality in patients with TBI seen in the pre-CT scan period was 16% in adults and 1.4% in children. The male to female ratio was 7:1. in adults and 1.1:1 in children. Most of the TBI in adults in the pre-CT scan period were due to either road traffic accidents (46%) or assaults (40%), while a different pattern was observed in children, with falls from a height being most frequent (50%) followed closely by road traffic accidents (42%). In this group, the frequency of early seizures was 4% in adults and 8% in children. In the second study group of CT scan era TBI patients, the male to female ratio in patients with severe TBI (GCS 8 and below) was 8:1 while the overall mortality was 57% (60% of the patients dying within 48 hours of admission).

In the earlier years in this second study group (1992-1996), skull radiograph was the investigation of choice in patients with severe TBI (74%), CT scan of the head being done in only 24% of the patients, while in the later years (2009) CT scan of the head was done in all the patients with severe TBI. Brain oedema was the commonest CT scan finding in this second study group and 40% of the patients diagnosed with brain oedema had a poor outcome.

Other factors associated with a poor outcome in this group were abnormal pupillary reaction to light, hypotension (MAP< 70mmHg) and hypoglycaemia (blood glucose <10mmol/l). In this paper, the Global perspective of neuroepidemiology of TBI in low and middle income countries of sub-Saharan Africa, its role as a major cause of death and disability and possible preventive measures, are discussed.
Abstract No. 42

NEUROEPIDEMIOLOGY OF BRAIN TUMOURS KENYA

N J Mwang’ombe, PK Kitunguu

Gliomas account for more than 70% of brain tumours. Gliomas are associated with some rare inherited tumour syndromes such as Li-Fraumeni, Turcoit, von Hioppel-Lindau, Gardner and basal cell syndromes, multiple endocrine neoplasia type 1, tuberous sclerosis, neurofibromatosis 1 and 2. Gliomas have also been associated with environmental, occupational and life style factors. Irradiation has been confirmed to be a definite risk factor. Previous studies have reported lower brain tumour incidence among populations in Africa compared to Europeans.

This may be related to under-diagnosis and under-reporting in Africa. Annual global age-standardized incidence of primary malignant brain tumours is approximately 4 per 100000 for males and 3 per 100000 for females. These rates are higher in developed countries (males 6 and females 4 per 100000) than in less developed countries (3 males and 2 females per 100000). While under diagnosis may account for lower incidence of brain tumour in developing countries, ethnic differences in susceptibility to development of brain tumours may also play a role. There are differences in the epidemiology of brain tumours in children compared to adults.

Medulloblastoma and low grade glioma are the most common type of tumours in children compared to adults where high grade glioma and meningioma are the most common type of brain tumour. In this paper, the authors review the neuroepidemiology of brain tumours in Kenya by analyzing data obtained from previous studies by the senior author and his colleagues at the Kenyatta National Hospital, between 2000 and 2011. Data from 400 patients with brain tumours who underwent surgery is presented. A comparison is done with data from similar studies done elsewhere in Africa and the rest of the world.
Abstract No. 43

NEUROEPIDEMIOLOGY OF SPINA BIFIDA CYSTICA IN KENYA

N J Mwang’ombe, S G Njiru, M G Thiong’o

65 patients with spina bifida cystica were treated at the Kenyatta National Hospital, Nairobi, Kenya between September 2011 and August 2012. The mean age at presentation at presentation was 9 days. There was a male preponderance with 40 (61.5%) males and 25 (38.5%) females. In the order of family ranking most of the patients (31, 47.7%) were first born in their respective families. The average year at conception of the mother was 25.1 years with a range of 17-45 years. 55 (84.6%) of the mothers were married.

Majority of these mothers had some elementary education with 41 (63.1%) of them having attained primary education and 12 (18.5%) of them having attended secondary school. Majority of the mothers (50, 76.9%) had income less than 10,000 per month. Only 3 (4.6%) having a monthly income in excess of Ksh. 40,000 per month. 3 (4.6) of the mothers partook of alcohol in the prenatal period. Only 2 (3.1%) were confirmed diabetic. One mother had taken anticonvulsants in the prenatal period. Of note only 12 (18%) expressed awareness of folic acid supplementation.

Of these only 8 (12.3%) were actually supplemented. About 50(76.9%) of the mothers attended antenatal clinic. Majority of the mothers, 35 (53.8%), commenced their clinic attendance between the 4-6th months. 13(20%) of the mothers commenced the clinic attendance between the 1st – 3rd month. Majority of the mothers were found to have had low haemoglobin of 11.1%. None of the mothers had alpha fetoproteins tested during pregnancy. Additionally only 12(18.5%) of the mothers had an antenatal obstetric ultrasound done. Of these only 4 (33%) were reported as abnormal. The infants had a mean birth weight of 3.1 kg and an average admission weight of 3.4 kg.

The average head circumference on admission was 37.3cm. 27 (41.5%) of the patients had convex and tense anterior fontanelles. The most common sites for the lesion were Lumbar 18 (27.7%), lumbo-sacral 20 (30.8%), thoraco-lumbar 13 (20.0%), sacral 9 (13.8%) and thoracic with 5 (7.7%). 36(55.4%) had hip flexion representing a motor level of L3, 24 (36.9%) had knee flexion representing a motor level also L3. 4 (6.2%) had ankle dorsi-flexion representing a motor level at L5. 22 (33.8%) had knee extension, 26(40%) had hip extension and 3(4.6%)
had ankle plantar flexion all representing a motor level at S1. 31 (47.7%) had complete skin cover whereas 33(50.8%) had incomplete skin cover. 7(10.8%) had a documented CSF leak.

Evaluation of bladder function was done in all the patients, with a mean leak point pressure of 34 cm of water. The average post void residual volume was 19 cc of water. The average serum urea level was 2.2mmol/l. Common associated malformations were CTEV 42 patients (64.6%), hydrocephalus, 20 patients (30.8%), and 7 patients (10.8%) with kyphosis. The median age at surgery was 15 days. 39(60%) had spina bifida closure alone, 9 (13.8%) had SB closure then VP shunting. 9(13.8%) had spina bifida closure and vp shunting simultaneously. The median duration of surgery was 56 min. 23(21.5%) developed wound dehiscence, 12(11.2%) had features of wound necrosis while a further 12(11.2%) had concomitant wound infection. 5 (7.7%) developed a CSF leak and 4(6.2%) developed meningitis. 19(29.2%) developed hydrocephalus. 2(3.1%) developed shunt related complications. 31(47.7%) developed post operative fever.

The cost burden to the family in terms of transport and care was in excess of ksh. 45,000 per patient over the 30 day period of follow up in a majority of the cases. In this paper, these findings are compared with those of a study done at the same institution in 2004 by the senior author, and those from the rest of Africa. The challenges encountered in the management of this condition in sub-Saharan Africa is discussed.

Abstract No. 45

AN AUDIT ON PAIN MANAGEMENT AT EMERGENCY DEPARTMENT KNH

Alice W. Njihia; Mary N. Kikuvi

Kenyatta National Hospital Kenya.

Pain has been found to be one of the most common complaints causing patients to visit emergency departments. Pain management is a global issue and is particularly challenging in the emergency care environment.

The aim of the audit was to identify factors that contribute to significant gaps in pain management among trauma patients who sought treatment at emergency department of KNH. An audit on factors that contribute to gaps on pain management was carried out for two days in March 2012.
Clinicians were observed offering care to 100 trauma patients as they arrived at ED department. A structured checklist was used to audit valuables on time taken before trauma patients were given analgesics, availability of Resources and Professional practices.

The results showed that majority of the patients (35%) were aged 21–30 years. Patients given analgesics within 0-30 minutes were 26% while 57% of patients received analgesics within 31-60 minutes. Patients not given analgesic were 7%. Space contributed to 10% delay while 5% was due to supplies and documentation contributed to 20%. No patient was managed by use of pain management protocols/Guidelines.

In conclusion the audit identified good pain management practices as well as gaps

Abstract No. 47

GLOMERULAR FILTRATION RATE ASSESSMENT USING CREATININE RELATED PARAMETERS FOR HEALTHY ADULT KENYAN POPULATION

Stanley K Waithaka, Clinical Chemistry Laboratory Kenyatta

Objective: The purpose of the study was to establish the reference ranges of measured creatinine clearance and estimated creatinine clearance for adult Kenyan population.

Method: A prospective study carried out in clinical chemistry laboratory of Kenyatta National Hospital involving 265 healthy individuals between 18-60 years.

Reference ranges were constructed by using the parametric methods to estimate 2.5 and 97.5 percentiles of distribution as lower and upper reference limits. The glomerular filtration rate assessment of the adult healthy Kenyan population was carried out by investigating serum creatinine (SrCr), 24 hours urine creatinine clearance (Mcrcl), estimated creatinine clearance (Ecrcl), urine creatinine (UCr) and urine volume (UV). Two hundred and sixty five voluntarily study subjects comprising of 106 male and 159 females were recruited in the study.

Same sex mean difference was found for the established reference ranges of McrCl and Ecrl (male p=0.021 and female p=0.000). Decline rate in creatinine clearance in the ages under investigation were: male measured creatinine clearance (0.46 ml/min per year), male estimated creatinine clearance (0.29 ml/min), female measured creatinine clearance (0.39 ml/min per year) and female estimated creatinine clearance (0.2 ml/min).

**Conclusion:** Sex specific reference ranges for the assessment of glomerular filtration rate has been established. Age is an important factor in the interpretation of creatinine clearance of an individual. These reference ranges are different from those reported in literature, therefore each clinical chemistry laboratory should establish its own.

Keywords: reference range, glomerular filtration rate, adult Kenyan, Kenyatta national hospital

---

**Abstract No. 48**

HYBRIDS OF (2R, 3S)-N-BENZOYL-3-PHENYLISOSERINE AND ANTIMALARIAL PHARMACOPHORES: DESIGN, SYNTHESIS AND BIOLOGICAL EVALUATION

Peter M. Njogu¹ and Kelly Chibale²

¹Department of Pharmaceutical Chemistry, School of Pharmacy, University of Nairobi, P.O. Box 19676-00202, Nairobi, Kenya.

²Department of Chemistry and Institute of Infectious Disease and Molecular Medicine, University of Cape Town, Rondebosch 7701, South Africa.

Tubulin is an essential protein in all eukaryotic cells, and a well known anticancer and anthelmintic drug target. It is a major structural component of microtubules. Microtubules are necessary organelles involved in cell division, maintenance of cell shape and integrity, and intracellular trafficking. Previous studies have shown that taxanes possess high antiplasmodial potency by disrupting microtubular structures of intraerythrocytic plasmodia.

Paclitaxel, a prototypical taxane, comprises two major pharmacophoric groups: the diterpenoid baccatin nucleus which forms the core of the molecule, and the (2R,3S)-N-benzoyl-3-phenylisoserine side chain attached via an ester bond at carbon 13 of the diterpene moiety.
Previous studies indicate that both the $(2R,3S)$-N-benzoyl-3-phenylisoserine and the baccatin nucleus are essential for the antimicrotubular and anticancer activity of paclitaxel, whereas individually they are devoid of any appreciable activity. This suggests that the side chain plays a critical role in the pharmacology of taxanes. We hypothesized that the contribution of $(2R,3S)$-N-benzoyl-3-phenylisoserine to the anticancer activity of paclitaxel can be replicated when hybridized with antimalarial scaffolds.

Drug hybridization is a commonly used and successful drug discovery practice in which two or more pharmacophores are hybridized into one molecule with superior pharmacology. In the present work, molecular hybrids of $(2R,3S)$-N-benzoyl-3-phenylisoserine with antimalarial scaffolds were designed, synthesized and evaluated for their in vitro antiplasmodial activities. The results of this work will be presented and discussed.

**Abstract No. 51**

AN AUDIT OF HOSPITAL RADIO-PHARMACY PRACTICE AT KENYATTA NATIONAL HOSPITAL NUCLEAR MEDICINE UNIT

Muchira J.M.\(^1\), Amugune B.K.\(^2\), Ogeto J. O\(^2\), Thoithi G. N.\(^2\) and Kamau J. M\(^3\)

\(^1\)Ministry of Health  P.O. Box 30016, Nairobi;  
\(^2\)Department of Pharmaceutical Chemistry, University of Nairobi  
P.O Box 19676, 00202 Nairobi;  
\(^3\)Nuclear Medicine Unit, Cancer Treatment Centre,  
Kenyatta National Hospital  
P.O Box 20273, 00202 Nairobi

Radio-pharmacy or nuclear pharmacy is the specialty practice of pharmacy which focuses on the safe and efficacious use of radiopharmaceuticals either for diagnostic and therapeutic purposes. The practice combines the expertise of pharmaceutical preparation and the skills needed to handle radioactive substances. Although the use of radiopharmaceuticals has been growing worldwide, the growth in developing countries has been slow with only Kenyatta National Hospital and Aga Khan University Hospital offering radio-pharmacy services in Kenya.

Diagnostic radiopharmaceuticals do not have major pharmacological effect and their administration is not associated with major clinical side effects.
Their clinical use, however, is associated with a risk deriving from radiation exposure and possible contamination during radiopharmaceutical formulation by chemical, biological and microbiological impurities and thus quality control of the radiopharmaceuticals is crucial.

**Objective:** The main objective of this research was to carry out an audit study on radio pharmacy practice at Kenyatta National Hospital Nuclear Medicine Unit in the Cancer Treatment Centre as per set international and regulatory standards.

The study was carried out using International Atomic Energy Agency (IAEA) preformatted checklists and questionnaires for hospital radio-pharmacy practice audits and the findings analyzed and evaluated using IAEA guidelines. Patient’s treatment records were reviewed for radiopharmaceuticals use trends.

The facilities observed available included radioactivity monitoring meters both for the working areas and the staff, functional hot lab, lead shielded waste disposal containers and tank for radioactive materials. From 209 patients files reviewed, it was observed that only three types of radiopharmaceuticals are used in the hospital with Technetium 99mTc - MDP the most frequently used (51.2 %) followed by 131 I (47.8 %) and Technetium 99mTc-DTPA (1%). The diagnostic uses were for bone scan (49 %), thyroid scan (25.5 %) and whole bone scan (6.7%).

Other minor diagnostic uses (< 2 %) included thyroid ablation, renal scan, and lung scan. 131I was the only one used for therapy (15.4 %) of thyrotoxicosis. The practice of radio pharmacy at the Nuclear medicine unit has to a large extent complied with the IAEA guidelines in the areas of administration, procurement, staff training, standard operating procedures (SOPs), personnel and environmental safety and waste disposal.

Inclusion of a pharmacist in the team should be considered to make it multidisciplinary and therefore more comprehensive in function. for input in monitoring patient outcomes, set effective quality control / quality assurance measures and initiate expansion of the range and use of radiopharmaceuticals with better therapeutic outcomes to the patients.
Abstract No. 53

CLINICAL COURSE AND OUTCOME OF HIV POSITIVE CHILDREN RESIDENT AT A CHILDREN’S HOME IN NAIROBI: A 15 YEAR REVIEW (1995-2010)

R Musoke¹, T Palakudy², A Panikulam², M Owens³, R Lwembe³, R Lihana³, EM Songok³, H Ichimura³

¹University of Nairobi
²Nyumbani Children’s Home, Nairobi
³Kenya Medical Research Institute, Nairobi

Background: Availability of antiretroviral therapy (ART) has changed the outcome of HIV. Prior to 2005 drug supply was erratic, paediatric formulations difficult to get and costs were prohibitive.

Method: The current is a retrospective report on outcome 207 HIV infected children we have consistently followed up clinically since 1995, immunological and virology since 1998 and ART since 1999.

Results: Out of the 207 children 146 (70.5%) are alive, and 61 (29.5%) have died. Mean age at admission was 4.7yrs (range 2 months to 14yrs) and end of 2010 mean age was 14yrs (range of 2yrs to 24yrs) Most of the deaths were in the period before availability of ARVs. Eleven of the 17 children who died after 2000 were on ART. At the start of therapy 71 (63.4%) had WHO stage 3/4 disease.

The most common condition was chronic lung disease 36 (32.1%). Majority of children improved clinically and immunologically. But CD4 counts remained low for age in 16 children. Since the start of ART, 57 children are on first line drugs while 55 are on second line and 20 are not on treatment. Viral load of children on first line became undetectable within 6 months in 66.7% while others took up to 24 months. Forty six children who never responded to first line drugs despite clinical and immunological response had resistant mutations.

Keywords: Paediatric HIV, survival, response to ART
Abstract No. 54

AN EVALUATION OF A PILOT DECENTRALIZED TRAINING ROTATION FOR MEDICAL STUDENTS AT THE UNIVERSITY OF NAIROBI

Minnie Kibore

Background: Over the past decade, the University of Nairobi (UoN) has increased the number of medical students enrolled three fold, resulting in a congested clinical training environment and inadequate student exposure to patient management at the main tertiary teaching facility. To enhance hands-on clinical exposure, the UoN increased the number of training facilities outside of the tertiary teaching facility. This is the evaluation of a pilot decentralised training rotation.

Methods: The decentralized training program was piloted in October 2011 with 29 fourth-year medical students at four public hospitals. Each student selected a discipline for a seven week clinical rotation from obstetrics and gynecology, pediatrics and child health, internal medicine, surgery or public health. We evaluated students’ learning experiences pre and post-rotation using a series of focus group discussions (FGD) and a quantitative evaluation tool based on the CANMEDS framework of competencies. A three-person team developed the codes for the FGDs and then individually coded the transcripts anonymously. The team discussed their findings which were triangulated to confirm the major findings.

Results: Before the rotation, the students expressed the motivation to gain more hands-on clinical experience. They acknowledged that they felt inadequately prepared for their internship due to lack of confidence in patient interaction and opportunity to exercise clinical skills. By the end of rotation, the students felt they had been actively involved in patient management and were able to perform common clinical and surgical procedures.

Students reported that they had learnt to navigate socio-cultural challenges in patient care, had formed mentoring relationships with senior staff and were making a better determination of future specialization. They further expressed the wish to return to those hospitals for internship and future practice. The students also reported significant improvement in 18 (64%) of 28 CANMEDs competencies.
The most improved competencies were as communicator, collaborator, manager, scholar and health advocate.

**Conclusion:** The decentralized model training enhanced students’ learning by providing greater clinical and community exposure. The training may also increase students’ confidence, ability and willingness to work in rural and under-served areas.

**Funding:** This program was supported by NIH grant number R24 TW008889

---

**Abstract No. 55**

**EVALUATING THE IMPLEMENTATION OF MINISTRY OF HEALTH GUIDELINES IN THE MANAGEMENT OF SEVERE MALNUTRITION AT THE GARISSA PROVINCIAL GENERAL HOSPITAL, GARISSA, KENYA:**

Warfa O1, Njai D1, Laving A1., Bashir M1, Mburugu P2.

1Department of Pediatrics and Child Health, University of Nairobi
2Garissa Provincial General Hospital, Garissa.

**Background:** Every year 10.6 million children die worldwide [1], with malnutrition accounting for about 2.2 million of these deaths. Half of Kenya’s high infant and under five mortality rates is also due to malnutrition. Although the national prevalence of acute malnutrition is 6%, the prevalence in North Eastern Province ranges from 17 to 30% [1]. Malnutrition is thus an important public health problem. Among other interventions in reducing child mortality, the World Health Organization has developed an evidence based guidelines (EBG) in the management of severe malnutrition. Proper implementation of this protocol was shown to reduce mortality rates to less than 5%.

**Objectives:** The primary objective of the study was to establish the level of adherence to Ministry of Health (MOH) guidelines in the management of severe malnutrition at Provincial General Hospital Garissa (PGH). The secondary objectives was to find out the proportion of children appropriately managed for severe malnutrition (steps 1-8) as per the protocol, the availability and accessibility of the guidelines, and to find out the barriers health workers face in utilizing the guidelines at PGH Garissa.
Study design: This was a short longitudinal study of 96 children, aged 6-59 months admitted to the Garissa Provincial General Hospital with diagnosis of severe malnutrition over 4 months period (July to October 2012).

Methods: The primary targets were children admitted to the pediatric ward with diagnosis of severe malnutrition and the staff working in paediatric ward, child welfare clinic and general outpatient department. Data extracted from medical file was recorded in an audit tool and a questionnaire administered to the health workers.

Data Management: Data was entered into the computer using MS access and analyzed with Stata version 11.

Results: Marasmus was the commonest presentation (93.8%); A higher proportion (63.5%) of patients were males. 85.4% of patients were younger than 2 years. Patients with marasmus were younger [mean age for admissions with marasmus was 16 (± 10.6) months compared to a mean age of 25 (± 13.7) months for kwashiorkor]. The commonest co-morbid conditions were diarrhea (52.1%), malaria (43.7%) and pneumonia (31.3%).

The mean length of stay was 7.6 days (± 2.9). Overall, 13 children died giving an inpatient case fatality rate of 13.5% with 53.8% deaths occurring after 48 hrs of admission. 22% of HCWs were trained on Integrated Management of Acute Malnutrition and availability of guidelines was reported by 37.5%. Health workers constraints included lack of training (78%), lack of guidelines (63%) and language barrier (68%).

Appropriate management was documented in only 14.6% for hypoglycemia, 5.2% for hypothermia, 31.3% for dehydration, 85.4% for electrolyte imbalance, and 90% for Infections.

Overall monitoring (Temp, pulse, RR, fluids) was done for 5.8% of patients.

Conclusion:
♦ MOH guidelines were followed in 5 out of the 8 steps
♦ Appropriate management of children with severe acute malnutrition was inadequate at Garissa PGH particularly for the critical steps (1,2 and 3) despite the availability of essential supplies
♦ Less than half(37.5%) of the HCWs were aware of MOH guidelines and only 37.5% reported the availability of guidelines at GPGH
♦ Health care workers have challenges -lack of updates(31.3%), staff shortage (40.6%) & language barrier(31.3) in the care of malnourished child.
**Recommendations:** Training of HCWs on the implementation of WHO guideline and improving staffing levels can improve quality of care for these children.

**Abstract No. 56**

**STRENGTHS AND CHALLENGES OF DECENTRALIZED HEALTH FACILITIES AS MEDICAL TRAINING AND RESEARCH SITES IN KENYA**

Njiri, F.

**Background:** The University of Nairobi (UoN) Partnership in Innovative Medical Education for Kenya (PRIME-K) was established to improve the quality of medical education and research in Kenya. To achieve this goal, PRIME-K supports continuing medical education, e-learning, adjunct faculty development, data collection, data management and data utilization at training sites.

**Methods:** We conducted a baseline assessment on site location, security level, IT infrastructure, community activities, staffing, continuous medical education activities, hospital services, disease burden, research activities and health information systems. The study team administered a structured key informant interview tool to the facility managers and the heads of medical records departments of the sites.

**Results:** Between February 2012 and June 2012, 5 district hospitals and 2 provincial hospitals were assessed. The facilities were adequately staffed with senior medical staff and support staff. Key medical services such as maternal, newborn, wards, pharmacies and laboratories were present in all facilities. All facilities were conducting regular continuous medical education activities but lacked facilities such as internet. Research activities at the sites were all conducted by external partners from research or educational institutions. All facilities had functional medical records departments, but challenges of staff shortages and limited storage space and lack of electronic medical records systems. Although the facilities had weekly health management meetings in which senior medical records officers presented reports, these reports were not based on analysis of available facility data.

**Conclusions:** The health facilities have significant staff capacity and are offering required health services. Although there are systems of continuing medical education these are challenged by difficulties accessing information. There is very limited research initiated by the facility and facility data is not being utilized in decision making. This program was supported by NIH grant number R24 TW008889
PARTNERSHIP FOR INNOVATIVE MEDICAL EDUCATION IN KENYA (PRIME-K)

Kiarie James, Bosire Kefa, Nduati Ruth, Mwanda Walter, Machoki James, Farquhar Carey, Redfield Robert, Kibwage Isaac

The University of Nairobi (UoN) Partnership for Innovative Medical Education in Kenya (PRIME-K) is one of the 13 projects funded by the National Institutes of health in Africa under the Medical Education Partnership Initiative (MEPI). The project is implemented in partnership with the University of Washington and the University of Maryland Baltimore.

The programme has 4 aims, which include improving the quality of education, decentralizing medical training to district hospitals, retaining faculty through opportunities for research and strengthening research administration. Over the last two years, PRIME-K has successfully implemented its planned activities with encouraging results.

To address the quality of education efforts have focussed on developing and improving a multidisciplinary skills lab, improving library and e-learning resources, enhancing faculty development, and establishing a medical education unit. Efforts toward decentralized training have been met with enthusiasm by medical students and adjunct faculty at the decentralized training sites. In the areas of research, PRIME-K is working to improve the availability of seed funding, as well as strengthening institution-wide research capacity.

The PRIME-K team is working closely with the Ministry of Health to meet local needs and ensure sustainability of efforts in the future. To broaden National impact PRIME-K is collaborating with Kenyatta University and Maseno University. To sustain efforts that have been piloted within PRIME-K, efforts are underway to capture outcomes relevant to the medical school, funders and the MOH.
FACTORS INFLUENCING ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV INFECTED AND HIV EXPOSED CHILDREN AT NAIVASHA DISTRICT HOSPITAL.

Wangia S., Muriuki G., Maru S., Mwangangi E.

\textsuperscript{1}Department of Pharmaceutics and Pharmacy Practice, University of Nairobi, Nairobi.

**Background:** Although non-adherence to prescribed therapies is widespread, it is particularly problematic with antiretroviral therapy for human immunodeficiency virus infection. Very high levels of adherence (≥95%) are required for antiretroviral therapy to be effective. There is limited information available in Kenya on adherence to antiretroviral therapy and its predictors in children.

**Methodology:** The study design was a cross-sectional study that used structured questionnaires to interview 129 study participants. Pharmacy pill count records for each participant were abstracted from the dispensing database software. Caregivers of children in this target groups were interviewed to determine their child’s adherence to their antiretroviral drugs as well as factors influencing the same. The data was then analysed using SPSS version 13.0 software.

**Results:** The mean age of participants was 20 months while the median age was 15 months (inter-quartile range 6 - 33 months). The pharmacy pill count method yielded a mean adherence rate of 93.9%. However, only 48.1% of the participants had optimal levels of adherence (≥95%). There was a significant difference in adherence between the PMTCT regimen (94.7%) and the HAART regimen (93.4%), (P = 0.045). Treatment for co-infection was the single most significant factor influencing adherence (P < 0.005).

**Conclusion:** Adherence to antiretroviral therapy by children on antiretroviral therapy in Naivasha district hospital was low, with more than half of them reporting sub-optimal adherence. Treatment for co-infections and regimen simplicity were found to be the major factors positively influencing adherence among this study population of pediatrics.
Abstract No. 61

PREVALENCE OF SEXUALLY TRANSMITTED INFECTIONS (STIs) AMONG MOST AT RISK POPULATIONS (MARPS) ENROLLED IN THIKA COMPREHENSIVE CARE CENTRE (CCC)

Mwaura J, Ngugi E, Nderitu M, Ndunge J, Muiga M, Majau P

1University of Nairobi, Centre for Disease Control NRB

Introduction: Sexually transmitted infections (STIs) are prevalent among Key Populations. Those who are HIV positive and attend the CCCs are offered a comprehensive care package on prevention referred to as Prevention with Positives (PWP). One of the major component of the package is screening and treatment for STIs, condom demonstration and distribution for purposes of prevention.

The primary objective is to prevent reinfection, reduce STI morbidity and thus improve overall care outcomes. A secondary objective is to interrupt transmission cycle of HIV and other STIs

Purpose: To document the prevalence of STI among the MARPs accessing care in our DICE. This will provide us with information on the success of our prevention interventions, and help estimate effectiveness of condoms distributed by the program

Methods: Retrospective cross-sectional study was done. We examined the clinical records of DICE (CCC) clients between the period January -December 2012. The data was aggregated according to the MARP typology i.e Female Sex workers, Men who have sex with men and truckers. The STIs were categorized using the syndromic guidelines by the MOH.

Results: A total of 80 clinical records were reviewed. 27.5%(22) of clients were diagnosed and treated for STIs. Vaginal Discharge syndrome accounted for the majority of the cases (16) representing 72.7%. Genital ulcers and lower abdominal pain accounted for 22.7% and 4.5% of the cases respectively.
Conclusion: STIs continue to cause significant morbidity among key populations clients seen in our DICE. There is need to intensify prevention interventions including health education, and promotion of consistent and correct condom use. It also points to the need for more in depth enquiry in to the patterns of condom use and address any barriers identified.

Abstract No. 62

MATERNAL DEATHS AND MATERNAL NEAR MISS CASES IN 20 SELECTED FACILITIES IN KENYA.

Prof Zahida Qureshi

Chairperson Dept of Obs/Gyn, University of Nairobi
Email: zqureshi@nbnet.co.ke, qureshi@uonbi.ac.ke

Background: Globally Maternal Mortality has reduced by around 30% as a result of efforts to meet the Millennium Development Goal 5. Unfortunately in Kenya the maternal mortality stands at 488 per 100,000 live births equating to around 7,500 deaths per year which is not following the global trend. In 2011 the World Health Organization conducted a Multicountry survey on Maternal and Newborn Health (WHOMCS) in 29 counties Kenya being one of them.

Objective: The main objective of this survey was to study the incidence and the management of maternal and neonatal conditions associated with maternal and neonatal mortality in a worldwide network of health facilities.

Methods: In Kenya 20 facilities in 3 provinces –Central, Rift Valley and Nairobi participated in the survey from 18th July to 17th October 2011. The survey was facility based review of records of all women who delivered, all near miss cases and all maternal deaths in the 20 facilities within the 3 month data collection period.

Results: In Kenya of the 20,753 participants, there were 75 maternal near misses cases and 55 maternal deaths. Of the cases of maternal deaths 55% were married, 72% were Para 4 or less and only 14% had secondary education. 24% of women were antenatal less than 28 week, 13% were beyond 28 weeks and 63% were intrapatum/postpartum. 62% of the deliveries were by c/section. Of the near miss cases 89% were married, 76% were Gravida 4 or less, 58% of the deliveries were by c/section.
Major causes of maternal deaths and near miss cases were Hypertensive disease and Haemorrhage

**Discussion:** The Near Miss Identification criteria is discussed with the aim that all facilities start incorporating this into routine data collection. The maternal near miss cases and maternal deaths will be discussed in detail with regards causes, pregnancy status; gestational age if antenatal, referral status, length of hospital status, interventions carried out and the contribution of the various facilities that participated.

---

**Abstract No. 63**

**ADHERENCE TO THE NATIONAL GUIDELINES FOR MANAGEMENT OF CHILDREN WITH PNEUMONIA AT GARISSA PROVINCIAL GENERAL HOSPITAL GPGH**

**Mutinda Catherine**

**Background:** Clinical Practice Guidelines (CPGs) for childhood illnesses including pneumonia in Kenya are contained in the basic paediatric protocols. The dissemination of the protocols started in 2007 through the ETAT + course and is ongoing. The implementation of guidelines into care has been shown to reduce case fatality from pneumonia by 36%. The study set to establish the level of and factors associated with adherence to the National guidelines on management of pneumonia in children aged 2 – 59 months at Garissa Provincial General Hospital (PGH).

**Methodology:** This was a cross sectional study carried out at Garissa PGH. This is the referral hospital of the former North Eastern Province (NEP) of Kenya which has the highest child mortality. Clinical records of patients 2- 59 months of age diagnosed with pneumonia from January 2012 to June 2012 were reviewed. Health workers who participated in the care of these patients completed a self administered structured questionnaire.
Results: The level of adherence to the National Guidelines for management of pneumonia was assessed at three levels: adherence to assessment of clinical signs and symptoms was found to be 42.9% (SD ±17.3), to correct classification of disease severity was 56.6% and to recommended treatment of pneumonia was 27.7%. The presence of a co-morbidity and severe disease was associated with better adherence to the assessment tasks (p = 0.033 and p =0.021 respectively). Disease severity was associated with better adherence to the disease classification task (p = <0.001) and to the treatment task (p = 0.02).

Twenty seven health workers participated in the study. Twenty five (92.6%) were aware that the guidelines existed and 22(82%) had been trained on the guidelines. Twenty five health workers reported that the hospital encouraged the use of guidelines and felt confident that they could and use the guidelines.

Conclusion: Health workers knowledge on the guidelines was high, but in practice adherence to them was low. The knowledge translation/practice gap that exists needs to be addressed in order to harness the benefits of the guidelines.

Abstract No. 65

CLINICAL OUTCOMES OF CHILDREN AGED 6 TO 59 MONTHS WITH SEVERE ACUTE MALNUTRITION ADMITTED TO MBAGATHI DISTRICT HOSPITAL

Background: The W.H.O estimates that severe acute malnutrition (SAM) contributes to about 1.5 million preventable childhood deaths every year. Systematic use of the W.H.O management guidelines for SAM has been reported to reduce case fatality and improve nutritional recovery in developing countries.

Objectives: This study determined the recovery rate, mean weight gain, case fatality rate and socio-demographic factors and co-morbidity associated with adverse outcomes.

Methodology: We conducted a prospective study involving children aged 6 to 59 months with W.H.O defined severe acute malnutrition admitted to Mbagathi District Hospital. They were managed according to the W.H.O guidelines. Study participants were consecutively enrolled. Their demographic data, clinical data and diagnoses were entered in data collection forms. Their weight, clinical state, therapeutic feed intake (using 24 hour recall) was recorded on alternate days until discharge, day 21 or death whichever came earlier.
Results: Out of the 164 children enrolled 91 (55%) were male. The median age was 13.5 months (IQR 9-18.8). For the 142 children who were discharged the overall and 21 day recovery rates were 3% (n=4) and 20% (n=4) respectively. The median duration of hospitalization was 11 days (IQR 8-15).

The median weight gain was 5.6g/kg/day (IQR 1.7-10.4). Forty four children (30%) experienced a weight gain of more than 10g/kg/day, 38(27%) gained 5-10g/kg/day, 60(43%) gained less than 5g/kg/day. The overall case fatality rate was 8% (n=13) with 77% of deaths occurring within the first week of admission. Diarrhoea was the only co-morbidity significantly associated with increased risk of mortality. (p=0.04) Mean calorie intake less than 200kcal/kg/day was significantly associated with poor weight gain. (p=0.015)

Conclusion: The nutritional recovery rate and median weight gain were below international standards due to suboptimal feeding and early discharge. The case fatality rate was comparable to international standards and diarrhoea significantly increased risk of mortality.

Abstract No. 66

PREVALENCE OF EARLY ONSET SEPSIS IN TERM NEWBORN DEEMED AT RISK IN THE POST NATAL WARDS OF KENYATTA NATIONAL HOSPITAL

Everlyn Nganga

Background: Neonatal sepsis ranks third as a leading cause of infant mortality worldwide. In Kenya it accounts for 60% of the current neonatal mortality rate which stands at 31 deaths per 1000 live births. This study addresses the need for early detection of babies at risk of sepsis, prompt diagnosis and treatment.

Objectives: To determine the proportion of term newborns at risk of neonatal sepsis using two clinical screening tools, prevalence and aetiology of early-onset sepsis in at risk term newborns in the post natal wards of Kenyatta National Hospital (KNH).

Methods: Structured questionnaires were administered to consenting mothers in the post natal wards that assessed presence of maternal risk factors and presence of neonatal clinical features suggestive of sepsis. Newborns at risk of sepsis
were further evaluated for C-reactive protein (CRP) levels, blood culture and sensitivity and classified as proven (positive blood culture), probable (positive CRP or ≥ 1 clinical feature of sepsis) and no sepsis. Newborns were followed for 72 hours. Univariate analysis was used for categorical variables and descriptive statistics for continuous or discrete variables. Bivariate analysis was used to investigate associations between neonatal sepsis and socio demographic variables.

**Results:** Between October 2012 and February 2013, 449 term newborns in the post natal wards were screened for sepsis risk and 139 (31%) found to be at risk. The proven sepsis prevalence was 12% while 58% had probable sepsis. Coagulase negative Staphylococcus (CONS) accounted for 43.5% of infection. Gram negative bacteria, Escherichia coli, Enterobacter spp. and Proteus spp. accounted for 21%.

**Conclusion:** Almost all admitted newborns are discharged home without any paediatric review yet one in every three was found to be at risk of early onset sepsis. Routine screening of all newborns prior to discharge will enable early recognition and treatment of newborns at risk.

---

**Abstract No. 67**

**PATTERNS OF ANTIBIOTIC USE AND DOSE ADJUSTMENT IN PATIENTS WITH CHRONIC KIDNEY DISEASE AT KENYATTA NATIONAL HOSPITAL, KENYA**

Atieno Mary Onyango¹, Osanjo GO², Okalebo FA², Nyamu DG²

¹Jaramogi Oginga Odinga Teaching And Referral Hospital, P.O. Box 849 - 40100, Kisumu.
²School of Pharmacy, University of Nairobi, PO Box 19676-00202 KNH, Nairobi.

**Background:** With the increasing burden of chronic kidney disease and end-stage renal disease, patients with reduced renal function are often encountered in Kenyan clinical practice. Reduced kidney function in patients alters drug disposition. This alteration necessitates appropriate individualization of drug therapy to avoid drug accumulation and adverse drug effects.
There are limited local studies on the pattern of antibiotic use and dose adjustments in renal patients and hence the basis of the current study.

**Objectives:** This study was designed to determine the patterns of antibiotic use and dose adjustment practices in patients with chronic kidney disease (CKD) at Kenyatta National Hospital (KNH).

**Methods:** The study was hospital-based retrospective cross sectional study. A preformatted data collection form was used to collect data from patient files who met the eligibility criteria. Data was collected on antibiotics prescribed to patients with CKD between January, 2006 and December, 2010 and the laboratory parameters of renal function. The antibiotic dosage for systemic administration, which ought to have been adapted depending on the GFR, was determined from the dosing guideline and this was compared with the prescribed dosages to determine the appropriateness of the prescribed doses.

Chronic kidney disease patients, with antibiotic prescription and aged 18 years and above were eligible for the study. Estimated glomerular filtration rate (GFR) was calculated using the Modification of Diet in Renal Disease four variable (MDRD) equation. Data analysis was done using STATA version 9 statistical software. Data was subjected to descriptive, confounding and logistic regression analysis.

**Results:** The median age at diagnosis of CKD in the study population was 46 years (IQR=32 – 60 years). There were slightly more males (57.3%) than females in the study. Ceftriaxone and co-amoxiclav were the most frequently prescribed antibiotics. The most important risk factor for inappropriate dose adjustment was the severity of renal disease. Dose adjustment was indicated in 59.9% of antibiotic prescriptions; however appropriate adjustment was only done in 27.7% (95%CI 23.18 – 32.23) of the prescriptions. Co-amoxiclav was the least frequently adjusted antibiotic with only 8.5% appropriate adjustment whereas, vancomycin had the highest prevalence of correct dose adjustment at 69.7% of the episodes that required adjustment. Overdosage was the most common dosing error. Therapeutic drug monitoring was neither requested nor done for any of the prescribed antibiotics considered in the study.
**Conclusion:** The degree of renal insufficient was an important determinant for appropriate antibiotic dose adjustment. Antibiotic dose adjustment was a frequently overlooked aspect in the management of infection in patients with CKD. Strategies to alert prescribers of the need for dose adjustment should be considered such as simplified aids to guide dose adjustment of the commonly prescribed drugs including antibiotics.

**Abstract No. 68**

**TRANSFORMING GROWTH FACTOR BETAS ENHANCE SECRETION OF MATRIX METALLOPROTEINASES AND PLASMINOGEN ACTIVATOR INHIBITOR-1 OF HUMAN ENDOMETRIAL AND ENDOMETRIOTIC CELLS.**

Ezekiel Mecha¹, Charles O.A. Omwandho², Hans-Rudolf Tinneberg¹ and Lutz Konrad¹

¹Department of Gynecology and Obstetrics, Justus-Liebig University, Giessen, Germany  
²Department of Biochemistry, University of Nairobi, Nairobi, Kenya

**Background:** Transforming growth factor-βs (TGFβs) play a central role in many developmental and pathological processes. The three isoforms of TGFβ (1–3) are secreted as latent complexes and activation is the key checkpoint controlling bioavailability (1). TGF-βs are abundantly and differentially expressed in the endometrium possibly under hormonal control (2). Thus TGF-βs might be involved in menstruation and biological processes leading to endometriosis. This study aimed to analyse the effects of TGF-β1 or TGF-β2 on proliferation and on secretion of matrix metalloproteinases 2/9 (MMP-2 and MMP-9) and plasminogen activator inhibitor-1 (PAI-1) of immortal human endometrial and endometriotic cell lines.

**Materials and Methods:** Immortal human endometrial stromal (T-HESC), epithelial (HES), endometriotic stromal (22B) and epithelial (12ZVK) cell lines were cultured without or with TGF-β1 or TGF-β2 to analyse cell numbers and effects on MMP2/9 and PAI-1 protein secretion. Cell numbers were counted with a CasyCounter after 48 and 72 hours. In addition, supernatants were collected and used to quantitate MMP2/9 and PAI-1 protein levels using ELISA assay.
**Results:** TGF-β1 or TGF-β2 significantly decreased cell numbers of all cell lines. The decrease in cell numbers of endometrial cell lines was higher compared to endometriotic cell lines. TGF-β1 or TGF-β2 stimulated PAI-1 and MMP-2/9 secretion in all cell lines. Of note, endometriotic stromal cells secreted 6-fold more PAI-1 and MMP-2/9 compared to endometrial stromal cells.

**Conclusion:** Our results suggest that TGF-β1 or TGF-β2 might reduce cell number by stimulating PAI-1 secretion, because we recently found that active PAI-1 reduced cell adhesion to the extracellular matrix. Additionally, the increased secretion of matrix metalloproteinase-2 (MMP-2) and PAI-1 upon stimulation by TGF-βs possibly indicate that TGF-βs contribute to the pathogenesis of endometriosis by stimulating PAI-1 and MMP-2/9 via de-adhesion and increased tissue breakdown respectively.

---

**Abstract No. 69**

**TOPICAL UMBILICAL CORD CARE FOR PREVENTION OF INFECTION AND NEONATAL MORTALITY**

**Jamlick Karumbi**

**Background:** Infections cause about 30% of all neonatal deaths. Umbilical cord offers a very good source of infections. Care of the umbilical cord varies across and within countries often reflecting community or health-worker beliefs. To help inform practice guidelines in Kenya, we undertook a review of current evidence on topical umbilical cord care.

**Objectives:** To review literature so as to define safe and effective topical umbilical cord care for prevention of mortality and cord infections in neonates.

**Methods:** We searched PubMed and Cochrane Library for randomized controlled studies (RCTs) that reported on any cord care compared with dry cord care in neonates. Existing systematic reviews were also considered. Critical outcomes were neonatal mortality and omphalitis. Two reviewers independently assessed the quality of evidence using the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) system. Meta-analysis was conducted for comparable studies with narrative synthesis used where this was not possible.
**Results:** Two systematic reviews in 2003 (18 studies, N = 39,635 newborns) and 2004 (21 studies, N = 8,959 newborns), 3 community cluster RCTs (n=54,388) and 5 hospital RCTs (N=1,007) were identified. The reviews reported no effect but a meta-analysis of the 3 high quality cluster RCTs showed a 17% mortality reduction (pooled risk ratio: 0.83 95% CI 0.74 to 0.94) amongst babies born at home who used 4% chlorhexidine (CHX) for topical cord care. Moderate quality evidence suggests that 4% CHX reduces omphalitis in community setting by 19% to 85%. Low quality evidence indicates no benefit in high income hospital settings.

**Conclusions:** Moderate to high quality evidence demonstrates that 4% CHX may be beneficial in reducing neonatal mortality and morbidity in low income settings. Use of 4% CHX should be considered in low income healthcare facilities where neonatal infection risks are high and a consistent policy may be valuable.

---

**Abstract No. 71**

**THE SAFETY AND TOLERABILITY OF LOW DOSE STAVUDINE VERSUS ZIDOVUDINE IN PATIENTS AT KENYATTA NATIONAL HOSPITAL**

Ogola BA\(^1\), Oluka MN\(^2\) and Osanjo G\(^2\)

\(^1\)Mathari Referral Hospital, Nairobi
\(^2\)Department of Pharmacology & Pharmacognosy, University of Nairobi,
P.O. Box 19676-00202 KNH, Nairobi, Kenya

**Background:** Stavudine (d4T) and zidovudine (AZT) form the backbone of the most commonly used first-line highly active antiretroviral therapy (HAART) regimens in Kenya.

Due to safety concerns, and in line with the World Health Organization’s recommendation, Kenya is currently phasing out d4T from HIV/AIDS treatment programmes. However, the move to abandon stavudine in resource constrained settings continues to elicit debate in Africa among clinicians, researchers and patient groups.
**Objective:** This study was designed to compare the tolerability and efficacy of AZT with low dose d4T (30 mg) in treatment of HIV infected adults in urban Kenya, and to generate data on the safety of low dose stavudine.

**Method:** The design was a retrospective hospital-based cohort study that involved examination of records of patients on antiretroviral therapy. The study had two comparator arms: (i) ART-naive adult patients initiated on stavudine 30 mg based HAART, and (ii) ART-naive adult patients initiated on zidovudine based HAART. Quantitative variables were described with medians or means, and compared between groups using Wilcoxon rank sum test. Association effects were determined by use of Chi-square test. Categorical variables were summarized using proportions. The time to event analysis was estimated using the Kaplan–Meier product limit method. Cox Proportional Hazards regression was used to model the hazard rates of regimen switching.

**Results:** The incidence rate (IR) of switching regimen was higher in patients initiated on zidovudine than in patients initiated on low dose stavudine (11.3 % and 7.0 % respectively). The most common reason for regimen switch was toxicity (79.2 %). In patients initiated on stavudine, lipodystrophy was the main reason for treatment change (53.2 %) followed by peripheral neuropathy (23.4 %). Amongst patients initiated on zidovudine, anaemia was the main reason for treatment change (33.3 %). There was no significant difference in median change in CD4 cell counts between the two treatment groups.

**Conclusion:** The study has showed that patients initiated on a zidovudine based regimen were more likely to change their treatment compared to those on a low dose stavudine. Safety concerns persist for stavudine despite dose lowering, however the low dose stavudine retain benefits comparable to zidovudine, and public health programmes should not abandon it completely.

---

**Abstract No. 72**

**Missed diagnosis of malnutrition in children aged 6- 9 months attending care at Mbagathi district hospital**

**Sophia Mwenyishee**

**Background:** Malnutrition remains a challenge worldwide and more so in the developing countries. Malnutrition is associated with more than 60% of childhood mortality in these countries¹. Studies have shown that clinicians miss the diagnosis of
malnutrition in children, more so mild and moderate forms of malnutrition in which the clinical presentation may not be obvious.

**Objectives:** Primary objective: To find out the prevalence of missed diagnosis of malnutrition in children aged 6-59 months attending health care at Mbagathi District Hospital. Clinicians still use the clinical diagnosis of malnutrition and thus miss out on many children presenting with mild to moderate forms of malnutrition in which the clinical presentation is not as obvious.

Secondary objective: To determine the reasons why health workers missed the diagnosis of malnutrition.

**Methodology:** It was a cross sectional study carried out at the pediatric emergency outpatient clinic. The children’s nutritional assessment was carried out consecutively after they concluded their consultation with the attending clinician. The records were then reviewed to find out if malnutrition, should it be present in the child was missed. Systematically assessed for malnutrition using the weight for height standard deviation score (Z score); visible severe wasting and bilateral edema criteria and using the mid upper arm circumference (MUAC) val

For the secondary objective, different cadres of health workers attending to the paediatric patients were interviewed.

**Results:** A total of two hundred and fifty five children were recruited into the study. Malnutrition was missed in 88 (38.3%) of these children. The investigators identified malnutrition in 230 (90.2%) of 255 children who were seen, severe malnutrition was detected in 111 (43.5%), moderate malnutrition in 46 (18%) and at risk of malnutrition in 73 (28.6%) of the children.

Health workers cited lack of anthropometric measurements being taken as a major reason to the missed diagnosis of malnutrition. Other reasons included understaffing, lack of equipment and lack of recording of the nutritional status of children.
DETERMINANTS OF BREAST CANCER TAMOXIFEN THERAPY OUTCOMES AT KENYATTA NATIONAL HOSPITAL
Wata DE¹, Osanjo GO², Oluka MO², Guantai AN²

¹Kenyatta National Hospital, Hospital Road, P.O. Box 20723 -00202, Nairobi, Kenya
²Department of Pharmacology & Pharmacognosy, School of Pharmacy, University of Nairobi, PO Box 19676-00202 KNH, Nairobi.

Background: Breast cancer is the most prevalent cancer among Kenyan women. The current first line endocrine therapy for women with estrogen receptor-positive metastatic breast cancer, and adjuvant therapy for early stages of the disease is tamoxifen. While tamoxifen gives significant clinical benefits such as prolonging survival and reducing the incidence of contralateral breast cancers, worldwide data show that a significant number of patients still experience disease recurrence or progression during tamoxifen treatment. Diverse factors, including pharmacogenetics, are thought to contribute to the reduced efficacy and safety from tamoxifen.

Objective: This study was designed to determine the factors that impact on the treatment outcomes in breast cancer patients at Kenyatta National Hospital.

Methods: This hospital based retrospective study was designed to evaluate the effect of the occurrence of estrogen receptor, progesterone receptor, human epidermal growth factor and metastases, ethnicity, cancer stage and other factors on the outcome of tamoxifen therapy. Patients diagnosed with breast cancer and who had their first visit at the KNH RTC in 2008 were identified using the new patients register. A total of 219 patient records were sampled using systematic sampling. Analysis was performed in STATA.

Results: The mean age of the 219 participants was 46.5 years (range 23 to 92 years), majority (36.1%) of whom were aged between 41 to 50 years. Most study participants had stage 2B (21.9%) cancer type and the histological grade 3 breast cancer was predominant type (50.2%). Majority (37%) started chemotherapy one year after diagnosis, 75.8% of which was Cyclophosphamide, doxorubicin and fluorouracil (CAF) first line chemotherapy regimen. About 13.7% of the patients were later put on second line therapy with 19.4% being on docetaxel and zoledronic acid.
About 62.6% of the participants were on hormonal therapy majority of which was tamoxifen 54.8%. 101 (46.1%) developed metastasis after treatment verses 118 (53.9%) had no evidence of metastasis disease. Majority 10.5% of the metastasis cases were on the bone and local recurrence.

In bivariate analyses; cancer stage 2A (OR 0.29, 95% CI 0.12 to 0.77) and stage 2B (OR 0.29, 95% CI 0.12 to 0.77), presence of estrogen receptors (OR 0.24, 95% CI 0.12 to 0.77), presence of progesterone receptor (OR 0.26, 95% CI 0.09 to 0.72), human epidermal growth factors (OR 0.05, 95% CI 0.003 to 0.84), those on hormonal treatment (OR 0.34, 95% CI 0.19 to 0.62) and presence of treatment side effects (OR 0.34, 95% CI 0.12 to 0.91) were factors less likely to be associated with development of metastasis after treatment. However, participants on second line chemotherapy (OR 2.53, 95% CI 1.64 to 3.91) and particularly the docetaxel and zoledronic acid (OR 2.62, 95% CI 1.14 to 6.03) were more likely to develop metastasis after treatment. In multivariate analysis, HIV positive (OR 0.004, 95% CI 0.002 to 0.75), presence of estrogen (OR 0.23, 95% CI 0.08 to 0.64) and human epidermal growth factors (OR 2.53, 95% CI 1.64 to 3.91) receptors and obesity (OR 2.53, 95% CI 1.64 to 3.91) were the only independent factors influencing development of metastasis after treatment.

**Conclusion:** The study showed the need for ER/PR testing before commencing therapy. Younger patients were a significant proportion of the population studied and more effort should be put in their treatment and monitoring as they showed poorer prognosis. Enhanced screening for breast cancer would be invaluable in detecting the disease at earlier stages.
DETERMINATION OF NEVIRAPINE PLASMA LEVELS BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHIC METHOD

Faith A. Okalebo\textsuperscript{1}, Margaret N. Oluka\textsuperscript{1}, Anastasia N. Guantai\textsuperscript{1}, Scott McClelland\textsuperscript{2}, Susan Graham\textsuperscript{2} and Daniel Juma\textsuperscript{1}.

\textsuperscript{1}Department of Pharmacology and Pharmacognosy, School of Pharmacy, University of Nairobi.
\textsuperscript{2}University of Washington, Seattle.

Background: Nevirapine (NVP) is a non-nucleoside reverse transcriptase inhibitor (NNRTI) that is widely prescribed in resource limited settings as part of first line antiretroviral therapy (ART). The quantification of antiretroviral drugs in plasma is a valuable pharmacological tool since the NNRTI are known to exhibit pharmacokinetic/pharmacodynamic (PK/PD) and pharmacokinetic/toxicity relationships.

Thus characterization of the relationship between nevirapine plasma concentrations and drug response is key to the optimization of ART. Pharmacokinetic studies require accurate and precise analytical methods for the measurement of antiretroviral drug concentrations to ensure that correct and meaningful data are fed back into clinical care.

Objectives: The main objective was to validate a simple, sensitive and rapid method for the determination of nevirapine concentrations in human plasma using a high performance liquid chromatographic (HPLC) method.

Methods: Nevirapine and the internal standard (carbamazepine) were extracted from plasma into ethyl acetate under basic conditions and evaporated to dryness. The dried sample was reconstituted with methanol and 90 µL injected into the chromatograph. Separation of the analytes was achieved on a C18 reversed phase analytical column and detection was done at 282 nm. The mobile phase consisted of acetonitrile and phosphate with a flow rate of 0.8 mL/min under isocratic conditions. Method validation followed FDA guidelines.
Results: The method was of good selectivity and specificity for nevirapine and the internal standard (IS) with no interference from endogenous substances and concurrent drugs. Calibration curves were linear over the range of 0.645 µg/mL to 17.2 µg/mL (R² = 0.93 – 0.997). Intra and inter-day precision (%CV) were less than 10%. The absolute recoveries for the analytes (>96%) were consistent and reproducible. The carryover effects as well as the effects of hemolysis and freeze-thaw cycles were all within acceptable limits.

Discussion: The method employed a single step extraction procedure that made it simple and rapid. The use of carbamazepine as the internal standard was an advantage because it is readily available making the method suitable for resource limited laboratories. The method has been employed in the field for the determination of nevirapine plasma levels in HIV patients on various HAART regimens containing lamivudine, stavudine, zidovudine and tenofovir.

The successful field application of this method is a testimony of its reliability and future expansion is envisaged.

Key Words: High Performance Liquid Chromatographic method, nevirapine, carbamazepine, human plasma, HIV patients.

Abstract No. 76

VERTICAL TRANSMISSION ELIMINATION – THE OPTION B PLUS EXPERIENCE AT UNIVERSITY TEACHING HOSPITAL

Gachuno O W¹, Ongech J², Kiarie J¹, Mutai K²

¹University of Nairobi
²Kenyatta National Hospital

Background: The world Health Organization (WHO) has called for the elimination of mother-to-child transmission of HIV. Option B plus entails provision of maternal highly active anti retroviral therapy (HAART) as prophylaxis during antenatal, intrapartum and postpartum periods and continued for life. From 2010, mothers testing HIV positive at Kenyatta National Hospital (KNH) are offered option B plus.
Methods: Cross sectional study using program data. Data was abstracted from patients’ files and registers.

Results: Between Jan 2012 and March 2013, 6,708 women attended antenatal clinic and 13,029 women delivered in the hospital, and 440 HIV-exposed infants (HEI) were attended to in the clinic 6 weeks after delivery.

In the antenatal clinic 6382 (95.1%) tested HIV negative while 286 (4.3%) were HIV positive; 189 (2.8%) were known to be HIV positive and 40 (0.6%) were not tested. The median CD4 cells count was 430 cells (IQR 319-583 cells) and 83.9% received maternal antiretrovirals. The maternal antiretroviral regimen the mothers received were Option B plus 97.5% and AZT only 3%.

All the 928 mothers admitted with unknown HIV for delivery were tested for HIV and 22 (2.4%) tested HIV positive. Overall 454 HIV positive mothers delivered in the hospital of which 417 (91.9%) were known to be HIV infected at entry to maternity. Maternal antiretroviral regimens received were Option B plus 93.7% and single dose nevirapine plus AZT+3TC tail 6.3%.

All infants had HIV DNA PCR test and only 4 infants tested HIV positive transmission rate of 0.9% at 6 weeks.

Conclusion: Vertical transmission elimination is feasible with use of Option B plus.

TREATMENT COMPLIANCE AMONG PATIENTS WITH HYPERTENSION AT KENYATTA NATIONAL HOSPITAL (KNH)

Samuel Kimani¹ Waithira Mirie¹ Margaret Chege¹

¹University of Nairobi, School of Nursing Sciences

Background: Cardiovascular diseases (CVD) such as hypertension (HTN) are a leading cause of morbidity and mortality globally. They are gaining momentum in developing countries due to westernization, nutritional transition among others. Successful management of hypertension and other CVD are dependent on early diagnosis and initiation of treatment therapy including lifestyle modifications but more importantly treatment compliance. We sought to elucidate the treatment compliance among patients with hypertension attending Kenyatta National Hospital.
Methods: A cross-sectional sample (N=200) of cases who presented at Kenyatta National Hospital (KNH) in and out-patient departments. A structured questionnaire for obtaining socio-demographic, risk factors for HTN and treatment compliance was used. Objective measurements notably, anthropometrics were conducted to elicit physiological status of the participants. Ethical approval was obtained from the KNH/UoN Ethics Committee. Data was abstracted and analyzed using SPSS.

Results: A total of 200 hypertensive patients including 87 (43.5%) males were recruited with the average age of patients and illness being 52.7 and 5.8 years, while most (31.7%) patients were 60 years and above. Majority (96.5%) of patients were aware of their hypertensive status while 68 (34%) were suffering from other comorbidities mainly diabetes (70.6%). Majority 190 (95%) of the patients were on pharmacological antihypertensive therapy and 175(87.5%) took drugs as prescribed. Compliance with pharmacological therapy, clinic appointment, regular monitoring of blood pressure decreased (p<0.05) proportionally to age.

Additionally, a number of patients still engaged in risk behavior namely, smoking (10.5%), taking alcohol (13.5%), adding salt (55%) and lack of exercise (35.5%). Participants also had significant abnormal anthropometric measurements.

Conclusion: The results underscore the need to develop appropriate strategies to target specific behavioral interventions among clients with hypertension to leverage with pharmacological compliance. Emphasis on the importance on lifestyle modification for control and prevention of risk factors may delay development of complications, improve quality of life and assure longevity.

Acknowledgement: Support from KNH research grant (KNH/23/22 (PI) (2012).

Abstract No. 79

THE VALUE OF AUTOPSY - OVERVIEW

Mutuma G. Z.

1Senior Research Officer - Kenya Medical Research Institute
2Centre for Clinical Research. P. O Box 20778 Nairobi.

Objective: To give detailed overview of autopsy with benefits and methods of reviving autopsy rate.
Data Sources: Medical reports, reviews, and Med-line literature search using the standard English words ‘autopsy’, ‘Necropsy’ and ‘post-mortem’ concerning autopsy pathology.

Conclusions: Although autopsy has always been the cornerstone of medicinal practice and research, the rate of autopsy is regrettably low. The society and medical profession needs to revisit the value of autopsy inorder to revive this invaluable medical investigation.

Abstract No. 80

PREVALENCE OF LOW BIRTH WEIGHT BABIES AND THE ASSOCIATED MATERNAL RISK FACTORS ATNAIVASHA DISTRICT HOSPITAL

Ithondeka A¹, Nduati R¹, Wasunna A¹, Wainaina L¹, Kalunde S²,

¹Department of Paediatrics, University of Nairobi
²Department of Paediatrics, Naivasha District Hospital

Background: Low Birth Weight (LBW) has been estimated to be 15.5% of all births and out of these, 95% are in developing countries. In Kenya, the latest demographic survey found that birth weight is reported for 47% of births. It is therefore difficult to make an accurate estimate of the prevalence of LBW.

Justification: Lack of information on the burden of LBW limits the planning for provision of care for this population. This study was done to avail local data which will guide the provision of care for LBW babies at Naivasha District Hospital (NDH).

Objectives: This study sought to determine the prevalence of LBW at NDH and to describe the risk factors associated with LBW.

Methodology: A descriptive cross sectional study was conducted among newly delivered mothers and babies at the maternity unit of the hospital. Mother-baby pairs were recruited by consecutive sampling of all babies born at the facility over two months. Brief examinations were carried out on the pair and questionnaires were filled out. Data analysis was done using STATA11.0. Chi square, T tests were utilized with univariate and multivariate analysis.
**Results:** The study sampled 321 mother-baby pairs. The prevalence of LBW was found to be 13.7%. LBW was associated with lower mid upper arm circumference (MUAC). Each unit increase in MUAC (cm) raised the mean birth weight by 28.4gm [(95% CI 13-43.9), p value < 0.001]. First order pregnancies [(95% CI 0.16-0.64) p<0.001], Finnstroms score (p=0.007) and head circumference (p<0.001) were associated with LBW.

**Conclusions:** The prevalence of LBW at NDH was 13.7%. Poor maternal nutrition as evidenced by lower MUAC measurements and first order pregnancies were significant maternal risk factors for LBW.

**Keywords:** Low birth weight, prematurity, prevalence, risk factors, Naivasha, Kenya

---

**Abstract No. 81**

**DEVELOPING MATERNAL, NEWBORN AND CHILD HEALTH CAPACITY IN IMPLEMENTATION SCIENCE, LEADERSHIP AND MANAGEMENT THROUGH TRAINING**


**Background:** Translation of research findings into policy and practice and strong leadership are required to reverse the unacceptably high maternal, infant and child mortality rates in Kenya. However, the University of Nairobi (UoN) lacked a formal training program on implementation science and leadership in Maternal Neonatal and Child Health (MNCH).

**Methods:** Through the Medical Education Partnership Initiative (MEPI), UoN in collaboration with University of Washington and the Ministry of Public Health and Sanitation developed a multi-disciplinary training program consisting of three 5 day courses. The courses on implementation science, leadership and policy and program management targeted UoN graduates and Ministry of Health staff. The training uses a problem-based learning approach to contextualize implementation successes and failures in MNCH.
Results: In the three years 208 post-graduate students from the UoN Schools of Medicine, Nursing Sciences, Pharmacy and Public Health with 2 UoN faculty and 52 health workers from National, Provincial and District hospitals in Kenya have been trained. UoN Department of Obstetrics and Gynaecology and Department of Paediatrics and Child health have integrated content from these modules into their revised postgraduate training curriculum.

Conclusions: The collaborative process of curriculum development and training has helped to create a body of local experts in MNCH implementation science and leadership from the University of Nairobi and the Ministry of Health. These local experts have been critical in integration of the modules into existing curriculums for sustainability.

Abstract No. 82

Uptake of Combination of HIV Prevention Interventions among Participants in a Community Enrolled Cohort

Alfred Osoti, John Kinuthia, Francis Njiri, Dorothy Mbori-Ngacha, Irene Inwani, Peter Cherutich, Ruth Nduati, Ann Mwangombe, Ann Kurth, James Kiarie, Carey Farquhar

Background: In the absence of single magic bullet, combining HIV prevention strategies is best for reducing HIV transmission risk. At community and household level, couples may self-select HIV prevention interventions and this selective uptake may be associated with HIV status.

Methods: In Nyando District, Nyanza Kenya, conducted a cross-sectional study of 685 couples who were part of an ongoing community enrolled cohort. At enrolment in the cohort study, couples received information on HIV prevention intervention strategies after which they were counseled and tested for HIV. We did a cross sectional survey 6 months after enrolment on uptake of specific HIV prevention interventions

Results: As of March 31 2011, a total of 703 couples comprising 685 men and 703 women were enrolled in the nested cross-sectional study. More women than men were enrolled due to polygyny.
Overall uptake of HIV prevention interventions ranged 7% for voluntary medical male circumcision (VMMC) and 86% for maternal antiretroviral use by HIV positive mothers during pregnancy. HIV positive status was associated with increased condom use in the past month (OR 2.91 CI [2.35- 3.62], p <0.001.

Conclusions: In this setting with high HIV prevalence, household level uptake of effective HIV prevention intervention remains low but increases with knowledge of positive HIV status. More effort is needed to understand the barriers to uptake and novel ways of delivering effective community focused HIV prevention interventions to those at highest risk of HIV acquisition at household level.

Abstract No. 83

PREGNANCY RATES AFTER HIV TESTING AMONG COUPLES IN STABLE PARTNERSHIPS IN WESTERN KENYA

John Kinuthia, Pamela Akinyi, Alfred Osoti, Francis Njiri, Dorothy Mbori-Ngacha, Irene Inwani, Peter Cherutich, Ruth Nduati, Ann Mwangombe, Ann Kurth, James Kiarie

Background: In settings where childbearing is highly valued, couples desiring pregnancy may engage in unprotected sex despite risk of HIV transmission and acquisition. To evaluate the relationship between intentional childbearing and HIV status, we conducted a community-based prospective study to determine pregnancy rates after couple HIV testing.

Methods: Couples were selected using random global positioning system coordinate sampling. At enrollment and at 6-monthly intervals, couples completed a questionnaire using audio computer-assisted self-interviews, were screened for HIV and women tested for pregnancy. All HIV discordant, concordant positive and a subset of HIV concordant-negative couples were followed prospectively.

Results: Between March 2010 and October 2012, 2661 (75%) concordant negative, 389 (11%) concordant positive, and 504 (14%) discordant couples were followed up. There were 229 incident pregnancies reported after 1800 women years of follow up (12.7 pregnancies per 100 women years). Pregnancy incidence reduced with increasing age of the women (OR=0.90, 95% CI: 0.87-0.93). There was no difference in pregnancy incidence among women in concordant negative, discordant and concordant HIV positive relationships.
**Conclusion:** Comparable pregnancy rates between women in HIV concordant negative and HIV discordant relationships suggest that childbearing maybe an important risk factor for HIV transmission or acquisition. Interventions to assist young couples achieve pregnancy with minimal risk of horizontal transmission are urgently required.

**Abstract No. 84**

**USE OF MECHANICAL CPR COULD IMPROVE RESUSCITATION OUTCOMES IN KNH.**

F. Ndiawo

*Accident & Emergency Department, Kenyatta National Hospital*

**Objectives:** To determine whether mechanical CPR has better outcomes than manual CPR. Design: Retrospective literature review from databases which included “Hinari”, “Pubmed”, “Highwire”, Cambridge university press and search engine “Google scholar” were searched for articles with the phrase, “mechanical CPR”, published 1990-2011. 11 relevant articles were identified. The articles were reviewed and results summarized.

**Results:** Literature included 6 experimental and observational studies done on humans, 2 experimental studies done on manikins, 2 experimental studies done on pigs and 1 review. Capnography was consistent in mechanical CPR while it was inconsistent in manual CPR in one study. In another study, ETCO2 was 13.6mmhg, coronary perfusion pressure of 20mmhg in mechanical CPR and ETCO2 of 6.9mmhg and coronary perfusion pressure of 5mmhg in manual CPR. In all the articles reviewed, 10 showed that mechanical CPR had effective continuous compressions, increased pressure and flow, higher return of spontaneous circulation, better circulation in ventricular fibrillation, less rib fractures, increased cardiac output during compressions and its use adhered to set guidelines.

Other benefits of mechanical CPR were, that it could be used during transport and procedures such as cardiac catheterization, it had strong compressions, increased pulmonary artery blood flow and thrombus defragmentation in patients with pulmonary embolism. Only 1 article documented that mechanical CPR had less adequate compressions and poor adherence to procedure.
Conclusion: Mechanical CPR is more effective and safer than manual CPR and can be used in clinical settings. Healthcare workers however need to be trained to use it safely and effectively so have to minimize injuries. Considering the high number of resuscitations, coupled with the worldwide problem of staff shortage, it could lessen fatigue among hospital staffs especially on night shifts.

Abstract No. 86

HIV RISK AND PREGNANCY INTENTION

Pamela Akinyi, Alfred Osoti, John Kinuthia, Francis Njiri, Dorothy Mbori-Ngacha, Irene Inwani, Peter Cherutich, Ruth Nduati, Ann Mwangombe, Ann Kurth, James Kiarie

Background: HIV transmission in marriage has been shown to be a major source of new adult infections due to the high number of sero discordant couples. This study was done in Kisumu County to describe the attitudes of married couples towards pregnancy intention and HIV infection risk.

Methods: Data was collected at the participant’s home through dyad interviews then transcribed, into Atlas.ti software (version 5.2) for coding and to link quotes to the memos.

Results: Couples intend to have children irrespective of their serostatus. However this intention is influenced by number and gender of the children the couple have, HIV sero-status and economic status. Initiation and continuation of marriage is often conditioned on pregnancy. Condom use is viewed as a symbolism of unfaithfulness and therefore difficult to introduce in marriage even among the discordant couples. Conclusion: Negative attitudes towards condoms and the importance placed on childbearing in marriage may be important drivers of the HIV epidemic among married couples.
STRENGTHENING MATERNAL NEONATAL AND CHILD HEALTH IMPLEMENTATION SCIENCE RESEARCH IN NON-TERTIARY HEALTH FACILITIES IN KENYA


Background: Maternal Neonatal and Child Health (MNCH) research at the University of Nairobi’s (UoN) has disproportionately been based in the teaching hospital. This has limited involvement of lower level facilities that serve most patients in Kenya.

Methods: The Medical Education Program Initiative at UoN facilitated a collaborative process involving Ministry of Health (MOH) staff and UoN faculty to identify priority MNCH research problems. Through a competitive process, multi-disciplinary teams of post-graduate students from UoN Schools of Medicine, Nursing Sciences, Pharmacy and Public Health were funded to research on the identified MNCH research problems. Successful applicants were mentored on data collection, data analysis and manuscript writing by UoN faculty and senior staff from lower level facilities.

Results: From 5 teams that applied for funding 4 were funded. To qualify each group had to have 8-10 graduate students, addressing the same research problem and from at least 3 departments. A total of 38 students, each pursuing a specific research question were funded in the 4 groups.

The research problems addressed were malnutrition in mothers and children at the Mbagathi District Hospital, perinatal morbidity and mortality in Naivasha District Hospital, Prevention of mother-to-child transmission of HIV in Naivasha district hospital and Guideline utilization for common maternal and childhood morbidities in Garissa Provincial Hospital. Twenty five of the 38 students have successfully completed data collection and analysis and are in the process of dissemination of findings to respective facilities.

Conclusion: This program has resulted in growth in MNCH research outside the tertiary hospital that is involving local providers and addressing locally relevant problems. This has potential to directly influence practice in these sites and ultimately effect policy change.
ATTITUDES AND PERCEPTIONS OF MEDICAL TRAINEES TOWARDS COMPLEMENTARY AND ALTERNATIVE MEDICINE USE

Henry Nyongesa¹, Cecilia Munguti¹, Edgar Imbwaga¹, Robert Wanjala¹, Lambert Nyabola².

¹School of Medicine, University of Nairobi; ²School of Public Health, University of Nairobi

Background: There is a substantial increase in the consumption of complementary and alternative medicine (CAM) for management of a variety of ailments. This has spawned renewed interest in assessing determinants underlying this phenomenon. The present study aimed at unraveling the knowledge, attitudes and perceptions of medical trainees towards CAM.

Methodology: A cross sectional study was performed among medical trainees of University of Nairobi between March 2012 and May 2012. The respondents were asked to volunteer information on biodata, knowledge of various CAM modalities, sources of information and their beliefs and attitudes using a questionnaire based tool of data collection. Descriptive data was compounded using SPSS.

Results: A total of 124 trainees participated in the study, representing a response rate of 82%. There were more female respondents (52%) compared with males (48%). Most of the respondents were third year undergraduates (22%). Despite more than 60% of the respondents having heard of Pub med and Cochrane databases, less than 47% of the respondents use them. Generally, more than 50% of the respondents were more versed with herbal, African tradition, diet, support and spiritual modalities of treatment. They however had paucity of knowledge on homeopathy, naturopathy, ayurveda and acupuncture. Though most of the respondents uphold the benefits of CAM to modern medicine, they are skeptical about embracing it in hospitals or training centers (61% and 77%, respectively).

Conclusion: The re-emergence of this modality of treatment poses contrasting perspectives for the trainees in the local setting. Considering that a huge population uses these way for treatment, it is likely that the trainees will come across such patients. It therefore that students be familiarized with various modalities so that they offer an informed advice to their clients.
**Keywords:** attitudes, perceptions, complementary, alternative, medical trainees,

---

**Abstract No. 19**

**PRELIMINARY RESULTS ON THE (USE) PREVALENCE OF CYTOKINES AND CHEMOKINES AMONG INDIVIDUALS WITH (TO DETECT) TB INFECTION IN HIV INFECTED INDIVIDUALS**

Machuki Z.\(^1\), Oyugi J.\(^{1,2}\), Ochanda G.\(^1\), Mutua F.\(^1\), Sule J.\(^3\), Waruk J.\(^4\), Mesa C.\(^4\), Kiazyk-Koesters S.\(^2,4\), Ball TB.\(^{1,2,4}\), Anzala AO.\(^1\)

**Affiliation:** \(^1\)University of Nairobi, \(^2\)University of Manitoba, \(^3\)Ministry of Public Health of Kenya, \(^4\)Public Health Agency of Canada

**Introduction:** Tuberculosis (TB) is one of the leading causes of death worldwide and human immunodeficiency virus (HIV) co-infection poses a great challenge in its control. Furthermore, diagnosis of TB in HIV co-infected subjects is not straightforward. Early diagnosis of TB is important in the control of TB both for treatment of patients and curbing transmission to others in the community. This study aimed at identifying biomarker response to tuberculosis specific antigens (ESAT-6 and CFP-10) which could improve diagnosis of tuberculosis and differentiate between active and latent tuberculosis.

**Methodology:** Eighty active tuberculosis and HIV negative (n=36), active tuberculosis and HIV positive (n=26), latent tuberculosis and HIV negative (n=11) and tuberculosis negative and HIV negative (n=7) subjects were recruited from another ongoing study. Luminex multiplex cytokine assay was performed to determine the levels of 17 cytokines/chemokines in QFT supernatants. The antigen-dependent biomarkers were determined by subtracting the concentration of cytokine in the nil tube from the antigen tube.

**Results:** Interleukin 2, IFN\(_\gamma\) and IL1ra were produced in significantly high amounts in antigen stimulated whole blood from M.tuberculosis infected compared to controls who were quantiFERON® TB Gold negative and HIV negative. Interleukin 1\(\alpha\), IL2, MIP1\(\alpha\) and TNF\(\alpha\) were produced in significantly higher amounts in ESAT 6 and CFP 10 stimulated whole blood from participants with latent TB infection (LTBI) compared to active TB.
**Conclusion:** Interferon gamma, IL2 and IL1ra can be useful biomarkers of TB. However, IFNγ, IL2 and IL1ra cannot be relied on in the diagnosis of TB among HIV patients especially those who are severely immunosuppressed. Interleukin 2, MIP1α, and IL1α have poor sensitivity in discriminating active TB and LTBI and therefore they cannot be used individually.

**Abstract No. 20 A**

**“THE KIGALI BOY WITH A MASSIVE TONGUE BUT NO RESPIRATORY DISTRESS” A CASE REPORT ON A MASSIVE CERVICO-LINGUAL CYSTIC HYGROMA.**

Odhiambo W.A, Francine K, Louise K

**Introduction:** Cystic Hygroma (CH) also known as cystic lymphangioma, or macrocystic lymphatic malformation is an aberrant proliferation of lymphatic vessels creating fluid-filled sacs that result from blockage in the abnormal lymphatic system. They are benign lesions, however, their capability to grow to an enormously huge size has potential pressure effects on the neighbouring structures like compression of the airway and other vital structures. The massive expansion can also lead to gross disfigurement of the neck and face.

In this poster, we present a rare case of cervico-lingual cystic hygroma in a 17-year old Rwandese boy. Though the lesion had caused massive expansion of the tongue (12cm x 10cm) and led to gross deformity of the mandible, the boy surprisingly had no signs of respiratory distress. His main concerns were inability to eat solid foods and compromised speech.

The management challenges and literature review on cystic hygroma of the head and neck region are discussed.
Abstract No. 21

LABORATORY ACCREDITATION: THE KITALE DISTRICT HOSPITAL EXPERIENCE

Jumba Sande Godfrey

Kitale District Hospital (KDH) Laboratory is one of the five satellite facilities being supported by the World Bank funded East Africa public health laboratory networking (EAPHLN) project. The project aims at establishing a network of efficient, high quality, accessible public health laboratories. In line with this objective the KDH laboratory was enrolled to the WHO AFRO stepwise Laboratory Improvement process towards accreditation (SLIPTA).

Benefits: Though the SLIPTA process the laboratory has made significant gains towards accreditation; from Zero star at baseline assessment of June 2011, one star as at the assessment of December 2011 and currently at 2 stars as at the assessment of December 2012. The results of the SLIPTA process are already evident such as improved confidence towards laboratory generated reports, the reduced client complaints, improved customer satisfaction.

A customer satisfaction survey undertaken confirmed this. The facility has seen an increase in laboratory revenue collection which can be attributed to more people accessing the laboratory to seek the quality services. Process control has also greatly improved. More partners including researchers are now more willing to work with us.

Key Lessons: Internal audit is a key component of the accreditation process as it is the basis through which compliance to the quality management system is verified and any non-conformity addressed and accreditation process requires team spirit.

Challenges: Some of challenges experienced have been lengthy procurement and bureaucratic procedures, laboratory design not conforming to the ISO 15189 standard and non-laboratory staff not understanding the ISO 15189 requirements.

Conclusion: As custodians of evidence based medicine, we therefore need to adopt accreditation widely in order to assure our clients of quality services.
WHO OWNS THE MAXILLARY SINUS? INCIDENTAL FINDINGS IN CONE-BEAM CT SCANS OF THE MAXILLARY SINUS

E. Kihara

School of Dental Sciences

Background: Cone beam computed tomography (CBCT) is custom-designed for evaluation of hard tissues in the craniofacial area and has been in use since 1998. It has been applied in various areas in dentistry including implantology, orthodontics and assessment of maxillofacial and dental pathology.

CBCT scans can cover wider areas which are outside the dentist’s area of interest such as the paranasal sinuses and airway spaces, intracranial structures, base of the skull, the cervical spines and the neck.

Previous studies have shown that assessment of these areas may reveal significant incidental findings which may benefit from further investigations and/or immediate management. Therefore, it is the moral and ethical responsibility of the dentist to ensure that the requested images are fully reviewed and significant findings are followed up.

However, the pathology in the sinus may be as a result of respiratory diseases, dental and maxillary jaw bone pathology or may be a primary sinus pathology. Hence, a multidisciplinary team that includes the dentist, radiologist, oral and maxillofacial surgeon as well as the Ear, Nose and Throat specialist is paramount in the diagnosis and accurate management of conditions and pathology involving the maxillary antrum. CBCT imaging is now available in Kenya.

However, in this country a study on incidental findings on CBCT images of the maxillary sinus has not been done, hence the need for this study.

Objective: The aim of the study was to determine the occurrence of incidental pathological and anatomical findings in the maxillary sinus as portrayed in CBCT scans of the oral and maxillofacial area.

Methodology: This was a retrospective cross sectional descriptive study which was done at a private imaging center (DAMIC). It involved a review of 60 CBCT scans of the maxilla.
Pre-designed data-collection forms were used to collect data from archived CBCT images as well as their respective imaging request forms.

**Results:** Majority 40 (67%) of the scans were done on female and 20 (33%) on male patients. (95%) scans were images of the permanent dentition while only 5 (5%) were images of children with a mixed dentition. Most of the scans were required for dental implant site assessment. There were incidental findings in 40 (67%) scans, 35 (68%) had pathologies while 8 (13%) had incidental anatomical findings.

The commonest incidental pathological finding was mucosal thickening (26, 43%), followed by polypoid lesions (9, 15%), opacified antrum (1, 2%) and foreign body (1, 2%). Incidental anatomical findings included protrusion of dental roots into the maxillary antrum (2, 4%).

**Conclusion:** There were incidental pathological and anatomical findings in the majority of the reviewed maxillary sinuses. Mucosal thickening was the commonest pathological finding. Due to the high prevalence of incidental findings, the dentists or their radiologist should review the scans in their entirety. This may enhance early detection, prompt referral and management of significant findings so as to avoid legal and medical implications. It is worth noting that accurate diagnosis and management of the conditions and pathologies that afflict the maxillary antrum does not belong to one cadre of clinicians but requires a multidisciplinary approach.
QUESTIONNAIRE SURVEY ON THE OCCURRENCE OF RISK FACTORS FOR TOXOPLASMA GONDII INFECTION AMONGST FARMERS IN THIKA DISTRICT, KENYA

E O Ogendi a, N W Mainaa, J M Kagiraa, M Ngothob , G G Mbuguac and S M Karanja

1Jomo Kenyatta University of Agriculture and Technology, P.O. Box 62000 (00200), Nairobi.
2Institute of Primate Research, P.O Box 24481 (00502), Nairobi.
3Kenya Medical Research Institute, P.O. Box 19462 (00202), Nairobi.

Author making the presentation

Background: Toxoplasmosis is a zoonotic disease caused by the protozoan parasite, Toxoplasma gondii. T. gondii infection has emerged as one of the most common opportunistic infections associated with HIV & AIDS. In pregnant women having a primary infection the organism can cross the placenta thereby infecting the developing foetus resulting in abortion and stillbirth.

Objectives: To determine the occurrence of risk factors for Toxoplasma gondii infection among farmers in Thika District, Kenya, a survey was conducted.

Methodology and study design: In the cross-sectional study, structured questionnaires were administered to 385 farmers to assess their behavioural practices, animal husbandry systems employed, food processing and preparation before consumption and knowledge-base with regards to toxoplasmosis.

Results: A number of households (46.8%) consumed water without boiling or applying any form of treatment. All respondents washed vegetables before cooking while 95% washed fruits before eating.

Boiled milk was preferred by 99.5% of the farmers. The majority (98.7%) consumed thoroughly cooked meat. Only four farmers (1.2%) who practiced mixed farming used gloves when handling livestock manure. Five farmers (1.6%) reported the occurrence of abortion in ruminants and pigs on their farms within the last two years before the study.

Almost half (44.9%) of the households owned cats, which were kept mainly as pets (79.8%) and for deterring rodents (20.2%). The majority of households (91.3%) fed the cats on left-overs while 8.1% provided cats with raw offal.
Only five households (2.8%) had litter boxes but none of the households with litter boxes used gloves when cleaning. Disposal of cat faeces was mainly by women (55.5%). Only 1 (0.3%) farmer had some knowledge about toxoplasmosis but was not aware of the transmission mechanism.

**Conclusion and recommendations:** The identified risk factors for T. gondii infection include: keeping of free-range cats, improper handling and disposal of cat faeces and manure, and consumption of untreated water. The study highlights the need for public health education to raise awareness of risk factors for T. gondii infection.

**Abstract No. 36**

**HOSPITAL EVACUATION PLAN: ASSESSMENT OF STAFF PREPAREDNESS IN EVENT OF INTERNAL DISASTER AT KENYATTANATIONAL HOSPITAL**

**Wangara Ali Akida**

*Kenyatta National Hospital*

**Background:** Hospital evacuation plan is lifesaving measure put in place to ensure nil or minimal threats and injuries to staff and patients in case of an outbreak or a disaster in a hospital. KNH holds a large number of people at any one time, a recipe for disaster.

**Objectives:** To assess the preparedness of staff in hospital evacuation plans in incidence of internal disasters. Specifically, the study seeks to identify rates of vulnerability of specific hazards in the hospital, find out the proportion of staff prepared in handling of internal disasters of such magnitude that calls for evacuation, and to discuss the best staff-oriented mitigation measures in event of internal disaster at Kenyatta National Hospital.

**Study Design, Setting and Methodology:** This was a cross-sectional study set at Kenyatta National Hospital. Descriptive scientific methods were utilized and validity and reliability of the data collected inferred. The dependent variable was staff preparedness while the independent were Hospital Evacuation Plan and Internal Disaster.
Sampling Method and Data Management: Stratified sample population was drawn from all staff working in KNH. Quantitative and qualitative data was collected by Self Administered Structured and Unstructured questionnaire entered on SPSS version 15.0 and findings of proportions and chi-square associations presented on pie charts, figures, tables and reports.

Results and Conclusion: Majority of staff 126(38.2%) reported fire to be most vulnerable hazard at KNH. Less than one-half of staff reported adequate preparation in the three specific areas of emergency preparedness. Familiarity with hospital disaster management policy showed significant association with knowledge of emergency assembly points (chi square = 16.6; p < 0.001). Staff sensitization on emergency preparedness and regular emergency drills be enhanced.

Key words- Evacuation Plan, Preparedness, Internal disaster, Safety Assembly Point. Acknowledgement: KNH/UON ERC for ethical approval and KNH Research and programs department for funding

Abstract No. 40

PAMOJA PROJECT: USING COTRIMOXAZOLE PREVENTIVE THERAPY TO STRENGTHEN REFERRAL/LINKAGE TO CARE & TREATMENT AMONG MOST-AT-RISK POPULATIONS (MARPS) IN KAJIADO COUNTY, KENYA.

Mungai AG

Purpose: Pamoja project aimed at improving HIV combination prevention interventions of Shujaa project and strengthening referral and linkage to care and treatment. Shujaa project, implemented by Hope worldwide Kenya is funded by CDC since October 2010 to September 2015.

The Shujaa project aims at increasing access to HIV combination prevention services to most-at-risk populations mainly female sex workers and their clients, truckers and general population followed by effective referral to care and treatment services for those testing HIV positive. The latter had been a challenge in Financial Year 1 (FY1) of implementation.

Methodology: This was done by building capacity to establish Cotrimoxazole prophylaxis as a service within the Shujaa project activities and at the Drop-in Service Centres (DISC) of Kitengela and Namanga in Kajiado County, Rift Valley.
The project trained Shujaa staff, local health care workers and peer educators on the importance Cotrimoxazole preventive Therapy (CPT). The project was implemented between May and July 2012, where each group was sensitized on the importance of CPT in a one-day workshop.

This empowered them to provide cotrimoxazole to all MARPs and general population who test HIV positive at various activities of Shujaa project. Monthly Cotrimoxazole is then continued at the DISC during which reinforcement of behavior change communication messages, prevention with positive interventions and an opportunity to establish MARPs only post-test club, where necessary, is taken.

**Results:** A total of 43 Shujaa staff/local health care workers and 26 peer educators were sensitized. They were informed emphatically on each of their roles in administration of CPT to clients, the client flow at various HTC activities, referral process for CD4 check and appropriate linkage to HIV care and treatment to local facilities, thus strengthening and monitoring the effectiveness of the referral system. Clients, whose immunity is not low enough to start ART, retain CPT follow-up at the DISC and CD4 repeated every 6 months and reviewed.

**Outcome:** The outcome has been increased uptake of HTC services, improved referral and linkage to care and treatment and increased opportunities for other HIV prevention interventions.

---

**Abstract No. 44**

**THE ROLE OF INTRACRANIAL PRESSURE (ICP) MONITORING IN THE MANAGEMENT OF SEVERE TRAUMATIC BRAIN INJURIES (TBI) IN KENYAN**

**J Mwang’ombe, P Kitunguu, M A Magoha**

Brain oedema is associated with poor outcome after TBI. ICP monitoring has become an established component of management of TBI in the developed world. There is considerable variability in the use of ICP monitoring and treatment modalities among head injury centers. However, there is a large body of clinical evidence supporting the use of ICP monitoring to guide therapeutic interventions. This is a review the role of ICP monitoring in severe TBI in SubSaharan African countries and Kenya, the cost-benefits and challenges.
PREVALENCE OF ANAEMIA AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC AT MBAGATHI DISTRICT HOSPITAL

Dr. Carolyne Wanjiru Nduhiu-Githinji
Prof. Koigi Kamau, Prof. Muia Ndavi, Dr. Harrison Tamooh,

Background: In the world, more than half the numbers of pregnant women are anemic. The burden of disease is heavy yet poorly estimated. The prevalence of anemia in Kenya has been variously studied with no reliable statistics by region though estimates exist. In Nairobi specifically, there are no documented studies on prevalence. This study will seek to determine the prevalence of anemia in Nairobi as well as its associated etiological factors.

Objective and Methodology: The objective was to determine the prevalence of anemia among pregnant women attending antenatal care at Mbagathi Hospital, a Level Four Government Hospital in Nairobi County. Pregnant women were enrolled in the study at their first antenatal visit and questionnaires were administered to obtain demographic information.

All the women who had a hemoglobin level of less than 11g/dl had further laboratory investigations to evaluate etiologic type and severity of anemia.

Results: Out of 381 women enrolled in the study, one hundred and thirty eight (36.2%) were found to be anemic. Anemia was more prevalent in the second (46.0%) and third (52.6%) trimesters. Seventy one women (51.4%) had mild anemia, sixty six women (47.8%) had moderate anemia while only one had severe anemia. One hundred women (72.5%) had microcytic anemia while thirty eight (27.5%) had normocytic anemia.

There was no case of macrocytic anemia. Associations between presence of malaria and helminthic infestations were not found to be statistically significant. Twenty women (5.3%) had their first visit in their first trimester while one hundred and fifty nine (42.7%) had their first visit in their second trimester and one hundred and ninety three (43.8%) in their third trimester. Other sociodemographic characteristics had no statistically significant relationships.
Conclusion: Microcytic anemia most likely due to iron deficiency was the most prevalent type. Routine iron supplementation should be encouraged early in pregnancy and educating women on early initiation of antenatal clinic attendance would reduce the problem of anemia in pregnancy.

Key words: Pregnant women, anaemia, prevalence, antenatal care

Abstract No. 50

SEROPREVALENCE OF TOXOPLASMOSIS AND IDENTIFICATION OF RISK FACTORS AMONG SLAUGHTERHOUSE WORKERS ACROSS KIAMBU COUNTY

Ichagichu Maina1, Kagira Maina2, Naomi Maina3, Oundo Joe4, Ngotho Maina5 and Karanja Simon6

1Department of Tropical and Infectious Diseases, Institute of Primate Research (IPR), Nairobi, Kenya.
2Department of Laboratory Animal Sciences, Jomo Kenyatta University of Agriculture and Technology (JKTUAT), Thika, Kenya.
3Department of Biochemistry, Jomo Kenyatta University of Agriculture and Technology (JKTUAT), Thika, Kenya.
4United States Army Medical Research Unit, Kericho, Kenya
5Department of Animal Sciences, Institute of Primate Research (IPR), Nairobi, Kenya.
6College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology (JKTUAT), Thika, Kenya.

Background: Toxoplasmosis has a worldwide distribution. All warm-blooded hosts, including humans, can be infected with Toxoplasma gondii. Toxoplasmosis is asymptomatic in immunocompetent individuals but can cause severe disease in congenitally infected children and immunocompromised people. The disease is a leading cause of infectious reproductive failure in animals. Slaughterhouse workers are at an important occupational risk of exposure to tissue cysts.

Objective: To determine seroprevalence of toxoplasmosis and risk factors for slaughterhouse workers in Kiambu County, Kenya.

Methodology and Study Design: A total of 105 participants were sampled in this descriptive cross-sectional surveillance study.
Questionnaires were administered to assist in determination of risk factors. Blood (5ml) was analysed for seroprevalence of T. gondii by enzyme-linked immunosorbent assay (ELISA) analysis of T. gondii-specific IgM and IgG antibodies. All data was entered and stored in Microsoft AccessTM database.

**Results:** Initial results indicate a T. gondii prevalence of > 20%. Risk factors include illiteracy/low levels of education, lack of specialized training as a butcher, limited awareness about toxoplasmosis and other zoonotic infections and not washing hands after work/not using soap.

**Conclusion and Recommendations:** The apparent significant seroprevalence of toxoplasmosis among slaughterhouse workers will be used to promote awareness. Further, this information will be used to develop disease prevention and control strategies in collaboration with stakeholders in livestock and public health sectors.

---

**Abstract No. 52**

**DATA DRIVEN DECISION MAKING IN KENYA’S HEALTHCARE SECTOR**

**Josephine KARURI¹, Peter WAIGANJO¹**

¹School of Computing & Informatics, University of Nairobi, Box 30197, Nairobi, 00100, Kenya
Tel: +254-20-4447870, Fax: +,
Email: joskaru@yahoo.co.uk, waiganjo@uonbi.ac.ke

Various health sector reviews done over the last decade highlighted stagnating or downward trends in health indices in the country, especially in maternal, newborn and child health. Among other factors, a health information system (HIS) that was weak and unable to provide the public health information necessary to inform timely health interventions was identified as one of the contributors to some of the declining health indices.

Recognizing this critical role played by a functional HIS, in 2010 Kenya’s HIS Division spearheaded an overhaul of the existing system to replace it with the web-based District Health Information Software (DHIS2). DHIS2 is designed to facilitate generation, analysis and dissemination of quality health information.
The role of quality data in enabling informed healthcare decision making cannot be over-emphasized. For instance, good quality routine HIS data delivered in a complete and timely manner can be used in surveillance of diseases of public health importance, to prevent or control outbreaks, as well to strategize on adequacy of service delivery under the various disease programs. Healthcare practitioners and other professionals can also use this data for training and research, and subsequently in production of research to policy briefs to inform national health policies and programs. Yet evidence shows very low levels of data demand and use by healthcare practitioners in Kenya. This study presents a review of several cases which elaborate on how good quality data has been utilized to drive decisions leading to improved healthcare programs and services in other countries. In particular the study points out the role that DHIS2 has played as an enabling tool for acquisition of this quality data. In conclusion it challenges the Kenya health professionals to take advantage of the improved national HIS to undertake evidence-based research to inform programmatic decision making and health policies in the country.

**Key Words:** Data Quality; Healthcare Data Demand and Use; DHIS2

---

**Abstract No. 59**

**IMPACT OF HIV AND AIDS COMPREHENSIVE PREVENTION AND SUPPORT PROGRAMME ON HIV TRANSMISSION AMONG MARPS CENTRAL AND EASTERN PROVINCES**

Ngugi E, Kageni L Nderitu M, Pere M, King’ori W, , Gisore A, Mwaura J, Muguna A, Maina, Mutegi A, Mureithi M. University of Nairobi,

**Introduction:** The University of Nairobi Centre for HIV prevention (UoN-CHIVPR) has been working with sex workers in Kenya since 1983, and since 2010 it has been enhancing access to quality comprehensive preventive services for Most-At-Risk-Populations (MARPs) in Eastern and Central Provinces of Kenya under PEPFAR grant.

**Purpose:** To establish whether there is a reduction of new cases of HIV infection among MARPs in Central and Eastern Provinces.
**Methods:** Holistic approach in HIV/AIDS prevention, care and support across continuum, mapping, zoning and mobilization of MARPs, evidence based interventions, partnering with strategic partners and other stake holders, training MARPs on Negotiation skills, male and female condom education and distribution, quarterly HIV testing, provider initiated counseling and testing (PITC), risk reduction strategies, STI screening and treatment, Post exposure Prophylaxis (PEP), sex work gender human rights and HIV/AIDS and income generating activities and or referral as necessary.

In addition sensitizing and educating law enforcement officers Central and Eastern Provinces on the issues of MARPs and how to work with them. Furthermore establishing and maintaining peer-led system of different MARPs for mobilization and community-based education and follow-up.

**Result:** The ongoing activities of the project have empowered the MARPs in the two provinces thus improving their health seeking behavior especially reporting for post rape care or after condom burst (PEP), improved condom uptake and negotiation skills and are able to make informed choices during their day to day activities including reduced number of sexual partners and alternative sources of income.

There has been a reduction in new cases of HIV infection as evidenced in second to fourth quarter, 5.1 %, 4.4% and 3.0% respectively among female sex workers.

**Conclusion:** Empowered MARPs are able to contribute towards “zero HIV transmission in Kenya by 2015” as they are able to better protect themselves, others and share information on the importance of condom use prompt STI treatment and quarterly retesting with their peers.
Abstract No 77

EVIDENCE REVIEW OF HYDROXYUREA FOR THE PREVENTION OF SICKLE CELL DISEASE COMPLICATIONS IN LOW-INCOME COUNTRIES

Mercy Mulaku1, 2, Newton Opiyo3, Jamlick Karumbi1,2, Grace Kitonyi4, Grace Thoithi1,2, Mike English2,5

1School of Pharmacy, University of Nairobi, Nairobi, Kenya
2SIRCLE Collaboration, KEMRI-Wellcome Trust Research Programme
3KEMRI-Wellcome Trust Research Programme
4School of Medicine, Hematology and Blood Transfusion Unit, University of Nairobi, Nairobi, Kenya
5Nuffield Department of Medicine, University of Oxford, Oxford, UK

Background: Hydroxyurea is widely used in high-income countries for the management of sickle cell disease (SCD) in children. In Kenyan clinical guidelines, hydroxyurea is only recommended for adults with SCD. Yet many deaths from SCD occur in early childhood, deaths that might be prevented by hydroxyurea therapy.

Objectives: To summarize the available evidence on the effectiveness and safety of hydroxyurea in the management of SCD in children below 5 years of age to support guideline development in Kenya.

Methods: We searched The Cochrane Library, PubMed and Clinical Trial Registries for both randomised controlled trials (RCTs) and observational studies of hydroxyurea therapy in childhood SCD. Critical outcomes were: mortality, rates of hospitalization and severe neurological events. Review processes (study selection, data extraction, data analysis) were conducted independently by at least two authors. Results were summarised narratively given significant differences in the included studies. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) system was used to appraise the quality of identified evidence.

Results: Overall, available evidence from one systematic review (n=26 studies), two RCTs (n=354 children) and 14 observational studies suggest that hydroxyurea may be associated with improved fetal hemoglobin levels, reduced rates of hospitalization and decreased frequency of pain events in children with SCD.
However, it is associated with adverse events (e.g. neutropenia) when high to maximum tolerated doses are used. Evidence is lacking on whether hydroxyurea improves survival if given to young children. Majority of the included studies were of low quality and mainly from high income countries.

Conclusion
Available limited evidence suggests that hydroxyurea may improve morbidity and hematologic outcomes in SCD in children aged below 5 years and appears safe in settings able to provide consistent haematological monitoring.

Abstract 80

PREVALENCE OF LOW BIRTH WEIGHT BABIES AND THE ASSOCIATED MATERNAL RISK FACTORS AT NAIVASHA DISTRICT HOSPITAL

Ithondeka A¹, Nduati R¹, Wasunna A¹, Wainaina L¹, Kalunde S²,

³Department of Paediatrics, University of Nairobi
⁴Department of Paediatrics, Naivasha District Hospital

Background: Low Birth Weight (LBW) has been estimated to be 15.5% of all births and out of these, 95% are in developing countries. In Kenya, the latest demographic survey found that birth weight is reported for 47% of births. It is therefore difficult to make an accurate estimate of the prevalence of LBW.

Justification: Lack of information on the burden of LBW limits the planning for provision of care for this population. This study was done to avail local data which will guide the provision of care for LBW babies at Naivasha District Hospital (NDH).

Objectives: This study sought to determine the prevalence of LBW at NDH and to describe the risk factors associated with LBW.

Methodology: A descriptive cross sectional study was conducted among newly delivered mothers and babies at the maternity unit of the hospital. Mother-baby pairs were recruited by consecutive sampling of all babies born at the facility over two months. Brief examinations were carried out on the pair and questionnaires were filled out. Data analysis was done using STATA11.0. Chi square, T tests were utilized with univariate and multivariate analysis.
Results: The study sampled 321 mother-baby pairs. The prevalence of LBW was found to be 13.7%. LBW was associated with lower mid upper arm circumference (MUAC). Each unit increase in MUAC (cm) raised the mean birth weight by 28.4gm [(95% CI 13-43.9), p value < 0.001]. First order pregnancies [(95% CI 0.16-0.64) p<0.001], Finnstroms score (p=0.007) and head circumference (p<0.001) were associated with LBW.

Conclusions: The prevalence of LBW at NDH was 13.7%. Poor maternal nutrition as evidenced by lower MUAC measurements and first order pregnancies were significant maternal risk factors for LBW.

Keywords: Low birth weight, prematurity, prevalence, risk factors, Naivasha, Kenya

Abstract No. 73

USE OF LOW COST MOBILE TELEPHONY AND ONLINE CONNECTIVITY FOR COST-EFFECTIVE COMMUNITY HEALTH STRATEGY PROGRAM IN RARIEDA DISTRICT: SUCCESS

1Ogude Gideon –Information and Communication Technology
2David Oluoch – Community Strategy Focal Person-MOH Rarieda District
3Linda Omedo – Health Programs Coordinator-PLAN INTERNATIONAL
4Goreti Oloo – Community Health Extension Worker –MOH Rarieda
5Dr. Florence Diemo – DMOH-Rarieda
6Elijah Mbogo - CHC-MOH Rarieda
7Dorcas Akinyi -CHC- MOH
8Elizabeth Juma -CHC MOH
9Carolyne Kolela -CHC MOH

Introduction: Rarieda Community Strategy health program has been implementing the use of ICT in running its activities for the last one year. There has been and Successes observed through use of this integrated ICT system. The object of this paper is to share the success and new skills learned which can be used by any organization to ensure that if they adopt ICT within their strategy then there is is likelihood of attaining success. We intend to share these successes and Inadequate and erratic supply of CBHIS tools
Objective: The key objective is to:
• Reduced costs in implementation of the Community Health Strategy Program by use of innovative methodologies.
• Attain the highest possible accuracy, timeliness, validity, reliability and quality data on health indicators to help in making critical informed decisions at household, village, community and district levels.

Innovation: Using readily available resources to design a simplified innovative system that requires little skills in use and user friendly to the Community Health Workers, DHMT and Stakeholders. The Key hardware needed was the low cost mobile telephone that could be easily purchased and owned by the CHWS. The software needed was the application that could run on the mobile telephone and conversion of the MOH513,514,515 tools into an application to be use by the CHWS,CHEWS and DHMT. Training modeled on low ICT capacity end users, considering the age and education level of the volunteer community Health workers.

Result: The alpha, and Beta tests have proven to be workable in three community sites of Kokwiri, Rageng’ni and Nyabera sub-locations.as the data is now being gathered by telephone and uploaded directly into a site created for this purpose. The site is www.nanogdns.org

Cost-Efectiveness: The CHWs, CHEWS and the CHCS have managed to save time in:
Report Analysis and generation when needed,
Making Timely decisions and response when and where needed.
Quality and analysis of data has also improved, decisions can be made any time just by running the report generator embedded online for community dialogues and action days.
There has been a great improvement on health indicators for the three communities and effificiency for decision making for the DHMT (District Health Management Team)

Recommendation: This is a system that can be scaled up to include the 23 different community Units with the view ti going paperless. Stakeholders can have access to the data at the site and make decisions on best times of doing community interventions like vaccinations. The ICT skills should be integrated in the CHWs Training Curriculum developed by the division of community health services of the Ministry of Public Health and Sanitation of the Government of Kenya to cushion the future.
Abstract No. 77

EVIDENCE REVIEW OF HYDROXYUREA FOR THE PREVENTION OF SICKLE CELL DISEASE COMPLICATIONS IN LOW-INCOME COUNTRIES

Mercy Mulaku¹, Newton Opiyo, Jamlick Karumbi, Grace Kitonyi, Grace Thoithi¹, Mike English

¹School of Pharmacy, University of Nairobi, Nairobi, Kenya
²SIRCLE Collaboration, KEMRI-Wellcome Trust Research Programme
³KEMRI-Wellcome Trust Research Programme
⁴School of Medicine, Hematology and Blood Transfusion Unit, University of Nairobi, Nairobi, Kenya
⁵Nuffield Department of Medicine, University of Oxford, Oxford, UK

Background: Hydroxyurea is widely used in high-income countries for the management of sickle cell disease (SCD) in children. In Kenyan clinical guidelines, hydroxyurea is only recommended for adults with SCD. Yet many deaths from SCD occur in early childhood, deaths that might be prevented by hydroxyurea therapy.

Objectives: To summarize the available evidence on the effectiveness and safety of hydroxyurea in the management of SCD in children below 5 years of age to support guideline development in Kenya.

Methods: We searched The Cochrane Library, PubMed and Clinical Trial Registries for both randomised controlled trials (RCTs) and observational studies of hydroxyurea therapy in childhood SCD. Critical outcomes were: mortality, rates of hospitalization and severe neurological events. Review processes (study selection, data extraction, data analysis) were conducted independently by at least two authors. Results were summarised narratively given significant differences in the included studies. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) system was used to appraise the quality of identified evidence.
Results: Overall, available evidence from one systematic review (n=26 studies), two RCTs (n=354 children) and 14 observational studies suggest that hydroxyurea may be associated with improved fetal hemoglobin levels, reduced rates of hospitalization and decreased frequency of pain events in children with SCD. However, it is associated with adverse events (e.g. neutropenia) when high to maximum tolerated doses are used. Evidence is lacking on whether hydroxyurea improves survival if given to young children. Majority of the included studies were of low quality and mainly from high income countries.

Conclusion: Available limited evidence suggests that hydroxyurea may improve morbidity and hematologic outcomes in SCD in children aged below 5 years and appears safe in settings able to provide consistent haematological monitoring.

ABSTRACT 89

PREVALENCE OF MUSCULOSKELETAL PAIN IN NAIROBI: RESULTS OF A PHASE 1, STAGE 1 COPCORD STUDY

Paul Etau Ekwom¹, Dr George Omondi Oyoo² and Dr Dismas Ongore³

¹Department of Medicine, Kenyatta National Hospital
²Department of Clinical Medicine and Therapeutics, University of Nairobi
³School of Public health, University of Nairobi, E mail: ekwomp@yahoo.com

Background: Musculoskeletal pain is common and a cause of disability. The Community oriented program for the control of rheumatic diseases (COPCORD) methodology was established to estimate the burden of musculoskeletal diseases, especially in developing countries. The prevalence of musculoskeletal pain has been reported to range from 4% to 26.3%.

Planning: Planning of a rheumatology service in a country requires data on the prevalence of musculoskeletal diseases. This are results of phase 1 of the stage 1 COPCORD study.

Objective: To determine the prevalence of musculoskeletal pain in Nairobi.

Design: This was a cross-sectional community based survey carried out in the Nairobi province.
Setting: Randomly selected households from the 161 sub-locations of Nairobi.

Subjects: Household occupants aged 15 years and older.

Main outcome measure: Study participants were interviewed using the COPCORD stage 1, phase 1 questionnaire.

Demographic variables, presence of body pains and joint aches were captured.

Results: A total of 3384 participants were recruited. Their baseline profile was as follows; mean age of 33.5 years (range 15-90 years), female to male ratio of 1.9:1; 98% non-vegetarians and 3.6% smokers. Trauma was reported in 1.9%.

Four hundred and six persons had experienced musculoskeletal pain within 7 days of the interview with a point prevalence of 12% (7.8% had joint pains alone, 3.7% had body aches alone and 1.5% had both body aches and joint pains).

The mean age of persons with joint pains was 49 years with a female to male ratio of 2.5:1

Conclusion: Musculoskeletal pain was common with a point prevalence of 12%.

ABSTRACT 90

PAP SMEAR CYTOLOGICAL FINDINGS IN WOMEN WITH ABNORMAL VISUAL INSPECTION TEST RESULTS REFERRED TO KENYATTA NATIONAL HOSPITAL

P.J. Chagwa; C.S. Kigondu; W. Waweru.

Background: The challenge of cost in establishing cytology and/or Human Papilloma Virus (HPV) mass screening for cervical cancer in resource limited countries prompted adoption of visual inspection techniques as alternative screening methods for cervical cancer despite them having low specificity.

Objectives: To determine pattern of cervical epithelial cell abnormalities, infections and to compare Pap smear and colposcopy results against biopsy where colposcopy and biopsy were done.

Study design: This was a cross-sectional descriptive study.

Study area and population: The study was conducted at Kenyatta National Hospital (KNH) in the Family planning clinic, cytology and histology laboratory facilities in consenting women 18 years and above with abnormal VIA/VILI referred to KNH for further management.
Specimen collection, processing and reporting: After obtaining informed consent, Pap smears were collected, stained using Papanicolaou staining procedure and reported using the Bethesda system of reporting cervical cytology (2001).

**Data management and analysis:** Chi-square test was used to compare categorical variables. All statistical tests were performed at 5% level of significance (95% confidence interval) using SSPS version 17.0 software.

**Results:** Of all participants recruited (n=232), 11 (4.7%) were reported as having infection and 57 (24.6%) had a report of atypical squamous cells of undetermined significance (ASCUS) or worse. 5 (2.2%) were reported as ASCUS, 13 (5.6%) were low grade squamous intraepithelial lesion (LSILs), 4 (1.7%) were atypical glandular cells (AGCs), 1 (0.4%) was atypical squamous cells cannot exclude high grade (ASC-H), 20 (8.6%) were high grade squamous intraepithelial lesion (HSIL) and 18 (7.8%) were reported as invasive carcinoma. Of the 57(24.6%) abnormal cases 39(16.8%) were referred for colposcopy and biopsy while ASCUS and LSIL 18(7.8%) were recommended for follow up.

Pap smear detected 11 out of 12 biopsy proven neoplasia while colposcopy detected 6 out of 7 biopsy proven neoplasia. 42 (18.1%) of study participants were postmenopausal with only 3 (7.1%) having abnormal results.

**Conclusions:** Pap smear was a useful follow-up test as it greatly reduced the number of referrals (to 16.8%) for further management while sparing the rest (83.2%) from unnecessary treatment.

**Recommendations:** It is recommended that Pap smears be done following abnormal visual inspection test results in facilities where Pap smears are routinely being done. There is need to increase awareness to service providers and the public about recommendation concerning use of visual inspection tests in postmenopausal women.
FIGHTING HIV AND ACUTE LEUKAEMIA FIVE YEARS ON

Dr Immaculate Mutisya, Dr Michuki Maina
Department of Pediatrics and Child Health University of Nairobi

Summary: We report a case of a 19 year old university student diagnosed with HIV and acute lymphocytic leukaemia 5 years ago. He presented with severe anaemia necessitating multiple transfusions at the age of fourteen. Bone marrow aspirate confirmed ALL-L2 and HIV infection was confirmed by ELISA at the same time. He completed his induction, consolidation and maintenance courses successfully with only essential hospital admissions. HAART was initiated soon after initiation of chemotherapy. Initial HAART regimen was D4T/3TC/EFV. He was later changed to TDF/3TC/EFV following D4T lipoatrophy. Clinically he has done well; current CD4 409 cells/mm3 (25%), VL- 89 cp/ml. Bone marrow shows remission for the last 12 months.

Key messages: Acute leukaemia in HIV is rare; There have been reported cases of B cell ALL and T cell ALL in HIV with poor outcomes. HIV in addition to being neurotropic and a tropic virus to CD4 also affects other cell lines. It has also been implicated in enhancing release of leukemogenic cytokines from monocytes and macrophages amidst low or absent T cell immune surveillance. The virus oncogenic nature is been demonstrated in T cell lymphomas albeit controversies.

Earlier cases reports indicated a rapid progression and high case fatality rates. However, with advent of HAART, there is considerable improvement on morbidity and survival. Close monitoring and prompt management of opportunistic infections is invaluable.

Possible drug interactions include use of AZT and bone marrow suppressive chemotherapeutic agents. Other considerations include concomitant use NVP with methotrexate due to hepatotoxicity.

Overall, the case we are presenting did well in contrast to earlier case reports. The management required a multidisciplinary team including, pediatric HIV specialists, hematoncologists, psychosocial and family support.
ABSTRACT 92

FERTILITY DESIRES AMONG HIV INFECTED ADULTS AT NAIVASHA DISTRICT HOSPITAL.

Mbuthia, C.W., Karanja J., Jaldesa G., Kinuthia J.

Summary: In Kenya, there over a million adults of reproductive age living with HIV/AIDS. Increased availability of HAART has resulted in improved sexual and physical health, resulting in increased of risk of intended and unintended pregnancies. Their reproductive intentions have not been well defined.

Methods: This was a cross-sectional study. A structured pre-coded questionnaire was administered to consenting HIV positive adults of reproductive age recruited using convenience sampling. Descriptive analysis of population characteristics and pregnancy intentions was performed.

Objectives: To determine fertility intentions of HIV positive adults attending the HIV care and treatment center at Naivasha level IV Hospital.

Outcome Measures:
1. Pregnancy intentions of HIV positive men and women
2. The utilization of and preferred FP method
3. Barriers to FP non-use among those without desire for immediate conception.
4. Sexual behaviors of HIV positive men and women

Results: Six hundred HIV positive adults were recruited. These included 300 men, age (mean, IQR) 41.3 (34.5-48) and 300 women, age (mean, IQR) 36.2 (29-42). Only 16.5% of women (n=297) and 24.4% of men (n=275) had pregnancy intentions. Females are less likely to desire more children compared to males (RR[95%CI], 0.68 [0.49-0.94]). Among the demographic characteristics only the number of living children was significantly associated with pregnancy intentions of male (RR[95%CI], 0.25[0.2-0.3]) and female(RR[95%CI], 0.2 [0.1-0.3]) HIV positive adults.

Among the 208 males who do not desire more children, 122 (58.7%) reported using contraception, 45 (21.6%) were not. Among the 248 women who do not desire more children, 126(50.8%) reported using contraception, 118 (47.6%) were not.

The preferred method of contraception was male condom for both men and women (35.3%, 39.3%), followed by injectables (9.7%, 14.7%).
Among those not desiring immediate conception (n=118 women, n=45 men), the only barrier for their contraception non-use was religious prohibition, one female and two men. More men than women were sexually active, 85.8% versus 55.5%. Thirty-three (75%) men and seventeen (15.2%) women who did not desire fertility and were not on any contraceptive method were sexually active, whereas thirteen (25%) men and ninety-five (80.5%) women were not. Men reported having more sexual partners in the last 3mo, with 17.5% having more than two partners, compared to 1.6% of women.

**Conclusions:** HIV positive adults have reproductive health needs and this should be integrated a part of the comprehensive care given in their clinics.

**Recommendations:** All facilities taking care of HIV infected adults should aim to provide continual FP services and educate partners on safe sex practices.

---

**ABSTRACT 93**

**CASE REPORT: AN UNUSUAL VULVAL LESION RESEMBLING GRANULOMA INGUINALE**

**Authors:** Walong E, Zuriel D Rogena E.A.

*Department of Human Pathology, School of Medicine, University of Nairobi*

*Corresponding Author: edwin.walong@uonbi.ac.ke*

**Introduction:** Granuloma inguinale is a sexually transmitted infection that frequently presents as a genital ulcer. It has however been known to present in unusual forms such as mass lesions and pseudoepitheliomatous hyperplasia. Pseudoepitheliomatous hyperplasia can mimic squamous cell carcinoma or adenocarcinoma. Diagnosis of granuloma inguinale can be made using cytological or Histopathologic examination and is based on demonstration of Donovan bodies. Case reports have been published in South African journals, and none from the rest of sub-Saharan Africa.

**Case Report:** A 40 year old lady presented to the Gynaecology Outpatient Clinic with history of a vulval lesion, excision biopsy done. Staining by H & E revealed an encapsulated granulomatous lesion composed of lymphoid cells and histiocytes surrounding a necrotic lesion with a focal neutrophil infiltrate.
The histiocytes have red-golden cytoplasmic bodies which stain deeply basophilic on Giemsa staining. These had a slight PAS positivity, stained negative with Zeil-Nielsen and Pearl’s stains.

**Conclusion:** The diagnosis of granuloma inguinale requires a high index of suspicion. Any lesion characterised by a granulomatous inflammatory process attended by necrosis, focal neutrophil infiltration, lymphocytosis, fibrosis and the presence of histiocytes with intracytoplasmic inclusions should raise an index of suspicion. A distinction may need to be made from chlamydia, Mycobacterium tuberculosis, and cat scratch disease.

---

**ABSTRACT 94**

**A FOUR MONTH FEMALE INFANT PRESENTING WITH PRIMARY IMMUNODEFICIENCY DIAGNOSED AT AUTOPSY: A CASE REPORT**

Sabai D, Rogen E, Walong E

Anatomic Pathology Unit, Department of Human Pathology, School of Medicine, University of Nairobi. PO Box 19676 Nairobi, Kenya.

**Introduction:** Di George syndrome is a type of primary immunodeficiency which results in T cell immunologic deficit due to thymic aplasia. It is manifested by severe immunodeficiency frequently presenting in infancy. In Subsaharan Africa, there are no case reports of primary immunodeficiencies. This case illustrates the findings of a case diagnosed at autopsy and the use of immunohistochemistry to evaluate the cellular lymphocyte deficiency that is diagnostic of Di George’s syndrome.

**Case presentation:** The decedent was a four month old African female infant who died while undergoing treatment at a referral hospital in Nairobi, Kenya. She presented with a month’s history of recurrent respiratory infections, a subsequent decline in the level of consciousness and succumbed to her illness.

Her two older siblings died of similar circumstances at 3-4 months of age. At autopsy, findings of thymic aplasia, bronchopneumonia and invasive fungal infections as well as minimal perilesional inflammation were characteristic of primary immunodeficiency, specifically Di George syndrome. Microbial cultures of cerebrospinal fluid, jejunal contents, spleen and lung tissue showed drug resistant Klebsiella spp, Pseudomonas spp, Serratia spp and Escherichia
coli. Immunohistochemistry of splenic tissue obtained from autopsy confirmed reduction of T lymphocytes.

**Conclusion:** Although rare, primary immunodeficiencies are encountered in medical practice in Kenya, unfortunately late diagnose limit their therapeutic options and a high index of suspicion is required as well as multidisciplinary approach to diagnosis, consisting of paediatricians, internists, pathologists, microbiologists and immunologists. Use of immunohistochemistry on histological sections of tissues derived from autopsy are important for post mortem diagnosis of De George syndrome. This report also highlights the requirement for fungal prophylaxis, antimicrobial prophylaxis, avoidance of live vaccines for these patients as well as family genetic counselling.

To be included in the abstract section of the abstract book

**ABSTRACT 95**

**MALARIACASE-MANAGEMENTFOLLOWINGCHANGEOFPOLICY TO CONFIRMED DIAGNOSIS AND TARGETED ACT TREATMENT IN KENYA**

Andrew Nyandigisi1, Dorothy Memusi1, Samwel Kigen1, Beatrice Machini1, Alex Muturi2, David Soti1, Gabriel Otieno3, Sophie Githinji3, Dejan Zurovac3,4,5

1Division of Malaria Control, Ministry of Public Health & Sanitation, Nairobi, Kenya
2Management for Sciences of Health, Nairobi, Kenya
3Malaria Public Health Department, KEMRI-Wellcome Trust–University of Oxford Collaborative Programme, Nairobi, Kenya
4Centre for Tropical Medicine, Nuffield Department of Clinical Medicine, University of Oxford, UK
5Center for Global Health and Development, Boston University, Boston, Massachusetts, US

**Background:** In 2010, the major change in malaria case-management policy in Kenya was a shift from presumptive treatment of fevers to universal parasitologica diagnosis and targeted treatment with artemether-lumefantrine (AL). Between 2010 and 2012, a series of activities were undertaken to support implementation of the new policy.
Regular monitoring of the quality of malaria case-management is critical to inform policy makers, implementers and donors on the implementation progress.

**Methods:** Five national, cross-sectional surveys using range of quality-of-care assessment methods were undertaken at public health facilities. The changes in national health systems and case-management indicators between the baseline survey undertaken prior to the implementation of the new policy and four follow up surveys are measured.

**Results:** The number of assessed facilities ranged between surveys from 172 to 176, interviewed health workers from 216 to 237 and evaluated outpatient consultations for febrile patients from 1,208 to 2,405. Compared to baseline results, the health systems indicators showed improvements by the end of 2012: availability of malaria diagnostics increased from 55% to 76%, AL stock-out declined from 27% to 22%, access to new guidelines increased from 0 to 57%, trained health workers from 0 to 26% and malaria supervision increased from 19% to 48%. In the same period, malaria testing increased from 24% to 47% while patients with fever who were both tested and treated according to the test result improved from 16% to 39%.

At facilities with AL and malaria diagnostics, malaria testing increased from 43% to 58% while those patients who were both tested and treated according to the test result increased from 28% to 48%. Treatment with AL for test positive patients improved from 83% to 93% while antimalarial treatment of test negative patients declined from 53% to 22%. The performance results for other health systems and case-management indicators and trends over five survey rounds will be presented during the meeting.

**Conclusions:** By the end of 2012, most of the key indicators have shown improvements however the changes were smaller than expected and for most indicators are still below the targets aiming at universal intervention coverage and adherence practices.
Vision
A world class University committed to world class excellence

Mission
To provide quality university education and training and to embody the aspirations of the Kenyan people and the global community through the creation, preservation, integration, transmission and utilization of knowledge.

- Started: 1956
- Student Population: 52,000
- Staff complement: 5,500
- Courses: 400
- Alumni: 120,000
- Faculties/Schools: 28
Managed Health Care Does More Than just Insurance

By Investing in....

Services

Education

Facilities

and in the Community

The Avenue Group

Avenue Hospital
Avenue Healthcare
Avenue Homecare
Avenue Rescue Services

Avenue Healthcare’s facilities feature convenience, accessibility and high quality medical care in a modern and pleasant environment. Avenue healthcare now serves over 800 companies through six outpatient clinics, including three in Nairobi: at Avenue Hospitals in Parklands, Nakumatt Lifestyle building in the City centre PJ. Place on Enterprise Road, Industrial area. In Mombasa the clinic is located at the Aga Khan Doctor’s Plaza on Nyerere Road, In Kisumu at Al-Imran Plaza on Oginga Odinga St. The Thika imaging Centre on Kenyetta Hwy. In Nakuru at the Polo centre, Kenyetta Ave. Plans are underway for a new clinic in Eldoret.

Avenue’s focus on preventive and promotive health helps reduce the cost of medical care. We offer occupational Health &Safety audits. Health Talk by doctors on important issues. Avenue Rescue Services offer training in first aid and CPR to corporate clients, institutions, recreational & sport centre and the general public. Avenue patients benefit from the continuing medical education required of staff and the organisation has invested heavily in educational materials such as the computerized Advanced Cardiac Life Support Mannequin. Service to the community is a hallmark of the Avenue Group corporate culture in partnership with local Kenyan companies. Avenue holds free health camps in rural areas and urban slums throughout the year. No public event is complete without Avenue’s emergency rescue services, patient transport and first aid tents.

We’re investing in Kenya’s future

Main Office
Avenue Hospital - First Parklands Avenue,
P.O. Box 45280 Nairobi 00100 Kenya
Tel: (254 2) 3745750, 3742907
Fax: 3750154 / 3750376
Website: www.avenuehealthcare.com