



THE AGA KHAN UNIVERSITY



# Annual Early-Career Health Researchers' Symposium

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*Research Culture: Mentoring the Next  
Generation of Researchers*

October 5, 2019

Trademark Hotel, Nairobi

#AKUResearchDay

## MESSAGE FROM THE FOUNDATION DEAN, MEDICAL COLLEGE



Welcome to the 3<sup>rd</sup> Annual Symposium for Early-Career Researchers. Our goal is to create an annual opportunity in East Africa for early-career researchers to share their work and receive constructive feedback from their colleagues. “Early-career researchers” are not bound by age as the commitment to build a research career can arise at any stage of a professional career, often triggered by an idea or a problem, a mentor who can support this early development and the opportunity to pursue the question of interest, a question often expanding to more questions and a growing research career. Whether you are a presenter in the Symposium or a participant in the audience we greatly appreciate your interest and commitment. Please let us know if we have succeeded in engaging you and let us know how we can improve for next year.

**Robert Armstrong, MD, PhD, FRCPC**

*Professor of Paediatrics and Dean, Medical College, East Africa*

## MESSAGE FROM DEAN, SCHOOL OF NURSING & MIDWIFERY



We are thrilled to co-host the 3<sup>rd</sup> Annual Early-Career Health Researcher’s Symposium. Research and publication outputs are cornerstones of the quality of an academic entity and they also inform practice. This highlights the importance of quality research outputs to contribute to positively impactful nursing and midwifery practice. We pride ourselves in inculcating research culture amongst faculty, and by extension current students and graduates. This symposium provides upcoming researchers with the opportunity to disseminate their research outcomes. It also provides networking opportunities that can lead to both enhanced and multidisciplinary research possibilities. The theme, ‘*Research Culture: Mentoring the Next Generation of Researchers,*’ underscores the symposium’s invitation to presenters and audience participants at all stages of their research careers, as research, by nature, is ongoing. We look forward to learning together!

**Dr Eunice Ndirangu**

*Assistant Professor & Interim Dean School of Nursing and Midwifery*

# Welcome to the 3<sup>rd</sup> Annual Early-Career Health Researchers' Symposium



It gives me enormous joy to welcome you to the 3<sup>rd</sup> Early-Career Health Researchers' Symposium. Without your contribution of abstracts and your attendance, this symposium would not have witnessed the remarkable growth that has taken place over the last three years of its existence. Aga Khan University may be the primary host, but the immense support received from our partners is important for the success of this event.

This year we received a record 83 abstracts from Aga Khan University and other institutions. Unfortunately, we could only accommodate a small number in a one-day conference that features an assortment of other equally important scholarly activities. Motivational presentations by a promising early-career researcher and an established highly respectable senior researcher, who have chosen clinician-researcher career tracks, has purposely become the signature of our symposia. It takes passion, great planning and commitment to combine research with the busy daily schedule of a practicing physician, yet the guest speakers demonstrate that it is doable. Protecting time from social and financial demands, especially in low and medium income countries, is challenging yet necessary for leadership scholarship to emerge. Academic Medical Centers that host Universities must be distinguishable from non-academic tertiary referral hospitals by the new knowledge they generate to inform national health policies and practices.

By bringing together senior and emerging clinician researchers from various disciplines, we provide a platform where rich professional exchanges take place, hopefully leading to new research and educational collaborations as well as mentorship opportunities. We also deliberately plan and execute the symposium as an “international” scientific meeting to provide presenters and participants with an incubator for presenting at such fora. Selection of session chairs and judges for the best poster and oral presentations is carefully done by an experienced scientific organizing committee that has been meeting over several months to consider every aspect of the meeting.

I take this opportunity to thank the judges, guest speakers, chairs and rapporteurs of sessions, our financiers and members of the Scientific Organizing Committee. Wishing you an enjoyable 2019 symposium.

**William Macharia, MBChB, MMed, MSc**

*Professor and Associate Dean Research, Medical College & School of Nursing & Midwifery, East Africa*

*Chair, Organizing Committee*

# PROGRAMME

<b>7:30 – 8:15 AM</b>	<b>Registration</b>
<b>8:30 – 8:40 AM</b>	<p><b>Conference Welcome</b>          Prof. William Macharia, <i>Chair, Organizing Committee, Associate Dean, Medical College &amp; School of Nursing &amp; Midwifery, Aga Khan University, East Africa</i></p>
<b>8:40 – 9:00 AM</b>	<p><b>Introductory Remarks</b>          Prof. Robert Armstrong, <i>Founding Dean, Medical College, East Africa, Faculty of Health Sciences, Aga Khan University</i></p> <p>Dr Eunice Ndirangu, <i>Interim Dean, School of Nursing and Midwifery, East Africa, Aga Khan University</i></p>
<b>9:00 – 10:20 AM</b>	<p><b>SESSION 1: INFECTIOUS DISEASES</b></p> <p>Each presentation will be 15 minutes.</p> <p><b>CHAIR:</b> Dr. G. Revathi, <i>Department of Pathology, Aga Khan University Hospital, Nairobi</i></p> <p><b>Vector competence of Aedes bromelia and Aedes vitattus mosquito populations from Kenya from chikungunya virus</b>          Francis Musili, <i>Kenya Medical Research Institute (KEMRI)</i></p> <p><b>Comparison of the sequential organ failure assessment (SOFA) and quick SOFA scores in predicting in-hospital mortality among adult critical care patients with suspected infection</b>          Mohammed Said, <i>Aga Khan University, Nairobi</i></p> <p><b>Factors influencing TB treatment and management: insights from patients’ experiences in Nairobi City County</b>          Alex Gateri, <i>African Population and Health Research Center (APHRC)</i></p> <p><b>Factors associated with mortality among TB patients in Ugunja sub-County 2014-2017 in Western Kenya</b>          Margaret Maureen Atieno, <i>Ministry of Health, Kenya</i></p>
<b>Question &amp; Answer Session</b>	
<b>10:20 – 10:45 AM</b>	<p><b>Keynote Address</b></p> <p>Prof Dalton Wamalwa, <i>Associate Professor, Department of Paediatrics and Child Health, University of Nairobi</i></p>

<b>10:45 – 11:00 AM</b>	<b>Coffee/Networking Break</b>
<b>11:00 AM – 12:20 PM</b>	<p><b>SESSION 2: HEALTH SYSTEMS/DIAGNOSTICS</b></p> <p>Each presentation will be 15 minutes.</p> <p><b>CHAIR:</b> Dr S. Vinayak, <i>Chair, Department of Imaging and Diagnostic Radiology, Aga Khan University</i></p> <p><b>Patients’ perspective on the non-urgent use of the emergency department in Kenya</b> Caroline Robai, <i>Aga Khan University, Nairobi</i></p> <p><b>Utility of touch imprint cytology in the intraoperative diagnosis of head and neck masses in patients attending surgical clinics at Kenyatta National Hospital</b> Everlyne Kutolo, <i>University of Nairobi</i></p> <p><b>Influence of health insurance on clinical decision making among Kenyan doctors</b> Elijah Yulu, <i>Kabarak University</i></p> <p><b>Diagnostic accuracy of multi-parametric MRI in diagnosis of clinically significant prostate cancer</b> Mariah Obino, <i>Aga Khan University, Nairobi</i></p>
<b>Question &amp; Answer Session</b>	
<b>12:20 – 1:20 PM</b>	<b>Lunch Break</b>
<b>AFTERNOON SESSION</b>	
<b>1:30 – 3:00PM</b>	<p><b>SESSION 3: SEXUAL AND REPRODUCTIVE HEALTH (SRH)</b></p> <p>Each presentation will be 15 minutes.</p> <p><b>CHAIR:</b> Prof Marleen Temmerman, <i>Chair, Department of Obstetrics and Gynaecology, Aga Khan University</i></p> <p><b>Prevalence and factors associated with female sexual dysfunction amongst women using hormonal and non-hormonal contraception at the Aga Khan University Hospital, Nairobi</b> Momin Butt, <i>Aga Khan University, Nairobi</i></p> <p><b>Assessing the cost-effectiveness of contraceptive methods from a provider perspective: case study of Kiambu County Hospital, Kenya</b> James Kiragu, <i>University of Nairobi</i></p>

	<p><b>Is there an association between maternal vaginal microbiota and placental inflammatory lesions in preterm birth? A case control study</b> David Atandi, <i>Aga Khan University, Nairobi</i></p> <p><b>Vaginal microbiota in women with spontaneous preterm labour versus term labour</b> Edgar Gulavi, <i>Aga Khan University, Nairobi</i></p> <p><b>Acceptability and adequacy of vaginal self-sampling for HPV DNA testing in cervical cancer screening among women attending tertiary hospital clinics in Nairobi, Kenya</b> Sagal Salad, <i>Aga Khan University, Nairobi</i></p>
<b>Question &amp; Answer Session</b>	
<b>3:00 – 3:20 PM</b>	<p><b>Keynote Address</b></p> <p>Dr Sikolia Wanyonyi, <i>Assistant Professor and Consultant in Obstetrics, Gynaecology and Fetal Medicine at the Aga Khan University Hospital, Nairobi</i></p>
<b>3:20 – 4:00 PM</b>	<p><b>POSTER PRESENTATIONS</b></p> <p>Each presentation will be five minutes.</p> <p><b>CHAIR:</b> Prof Stanley Luchters, <i>Chair, Department of Population Health, Aga Khan University</i></p> <p><b>Characterization and antibiotics susceptibility patterns of toxigenic vibrio cholerae isolates from Kisumu County, Kenya</b> Silas Awuor, <i>Kisii University</i></p> <p><b>Quality improvement for cancer pathology: does sampling retinoblastoma tumor for genetic testing lead to histology artefacts?</b> Barclay Obiero, <i>University of Nairobi</i></p> <p><b>Barriers to definitive hyper acute management of stroke at a tertiary facility in Nairobi, Kenya</b> Caroline Mithi, <i>Aga Khan University, Nairobi</i></p> <p><b>Magnitude of screening for gestational diabetes mellitus in an urban setting in Tanzania</b> Akampa Mukuwe, <i>Aga Khan University, Tanzania</i></p> <p><b>Prevalence of suspicious mammographic calcifications in newly diagnosed breast cancer patients at Aga Khan University Hospital, Nairobi</b> Mariam Omar, <i>Aga Khan University, Nairobi</i></p>

	<p><b>Sleeping with tuberculosis: do over-crowded university hostels in Kenya increase TB transmission among youths? A cross-sectional survey</b> Teresia Maina, <i>Pwani University</i></p> <p><b>Iron homeostasis in children with protein-energy malnutrition: a systematic review and meta-analysis</b> Kevin Juma, <i>Kenya Medical Research Institute (KEMRI)</i></p>
4:00 – 4:15 PM	Coffee Break
4:20 – 5:00 PM	<p><b>The relationship between gestational diabetes and a positive depression screen</b> Herbert Ozelle, <i>Aga Khan University, Nairobi</i></p> <p><b>Complementary feeding: is it the forgotten factor of the first 1000 days of nutrition?</b> Catherine Njeru, <i>Aga Khan University, Nairobi</i></p> <p><b>Prevalence and risk factors of Human Herpes Virus Type 8 (HHV-8), Human Immunodeficiency Virus-1 (HIV-1) and Syphilis among female sex workers in Malindi, Kenya?</b> Mirriam Nzivo, <i>Jomo Kenyatta University of Agriculture and Technology (JKUAT)</i></p> <p><b>Antimicrobial susceptibility pattern of Acinetobacter isolates from patients in Kenyatta National Hospital, Kenya</b> Victor Moses, <i>University of Nairobi</i></p> <p><b>Clinical profile and outcome of patients with acute kidney injury requiring Hemodialysis: two years' experience at a tertiary hospital in Rwanda</b> Benedicte Ndayishimiye, <i>Kirehe District Hospital, Rwanda</i></p> <p><b>Delivering difficult news in a tertiary level hospital in sub-Saharan Africa: a consensus study among residents</b> Karishma Sharma, <i>Aga Khan University, Nairobi</i></p>

**5:15 – 6:00 PM**

**SESSION 5: JUDGES' REMARKS AND PRESENTATION OF AWARDS**

**Judges' Remarks**

Prof Elizabeth Bukusi, *Chief Research Officer, Kenya Medical Research Institute (KEMRI)*

**Presentation of Awards**

Dr Shukri Mohamed, *Public Health Specialist, African Population and Health Research Center (APHRC)*

**Vote of Thanks**

Dr Jasmit Shah, *Assistant Professor, Department of Population Health, Aga Khan University*

# ABSTRACTS

## ORAL PRESENTATIONS

### **Vector competence of *Aedes bromelia* and *Aedes vittatus* mosquito populations from Kenya from chikungunya virus**

Francis Musili, *Kenya Medical Research Institute (KEMRI)*

#### **Background**

Kenya has experienced outbreaks of chikungunya (CHIKV) in the past years with the most recent outbreak occurring in Mandera in the northern region in May 2016 and Mombasa in the coastal region from early 2018. Despite the outbreaks in Kenya, studies on vector competence have only been conducted on *Aedes aegypti*. However, the role played by other mosquito species in transmission and maintenance of the virus in endemic areas remains unclear. This study sought to determine the possible role of rural *Ae. bromeliae* and *Ae. vittatus* in the transmission of chikungunya virus, focusing on Kilifi and West Pokot regions of Kenya.

#### **Methods**

Four-day old female mosquitoes were orally fed on CHIKV infected blood at a dilution of 1:1 of the viral isolate and blood using artificial membrane feeder for 45 minutes. The engorged mosquitoes were picked and incubated at 29–30°C ambient temperature and 70–80% humidity in the insectary. At days 5, 7 and 10 post-infection, the mosquitoes were carefully dissected to separate the legs and wings from the body and their proboscis individually inserted in the capillary tube containing media to collect salivary expectorate. The resultant homogenates and the salivary expectorates were tested by plaque assay to determine virus infection, dissemination and transmission potential of the mosquitoes.

#### **Results**

A total of 515 mosquitoes were exposed to the East/Central/South Africa lineage of CHIKV. *Ae. vittatus* showed high susceptibility to infection ranging from 75–90% and moderate dissemination and transmission rates ranging from 35–50%. *Ae. bromeliae* had moderate susceptibility ranging between 26–40% with moderate dissemination and transmission rates ranging from 27–55%.

#### **Conclusion**

This study demonstrates that both *Ae. vittatus* and *Ae. bromeliae* populations from West Pokot and Kilifi counties in Kenya are competent vectors of CHIKV. Based on these results, the two areas are at risk of virus transmission in the event of an outbreak. This study underscores the need to institute vector competence studies for populations of potential vector species as a means of evaluating the risk of transmission of the emerging and re-emerging arboviruses in diverse regions of Kenya.

## **Comparison of the sequential organ failure assessment (SOFA) and quick SOFA scores in predicting in-hospital mortality among adult critical care patients with suspected infection**

Mohammed Said, *Aga Khan University, Nairobi*

### **Background**

Sepsis is a global health priority and the leading cause of death in critical care. The SEPSIS 3 criteria introduced in 2016 is the latest tool in diagnosing sepsis. It uses SOFA and qSOFA scores in place of the SIRS criteria for better ability to predict mortality in patients with suspected infections. The performance of these scores in critical care units outside high-income countries remains largely unknown.

### **Methods**

We compared the performance of SOFA and qSOFA in predicting the in-hospital mortality of an adult critical care unit in Kenya. We conducted a retrospective review of all patients admitted to the critical care units with a suspected infection between 1 January 2017 and 31 December 2017. A standardized electronic data collection tool was used to collect demographic, clinical and outcome data on the participants. The area under the receiver operating characteristic curves (AUROC) with 95% confidence intervals was used to compare SOFA and qSOFA.

### **Results**

We enrolled 450 patients with a mean age of 56 years [SD  $\pm$ 19.10] and 57.60% were male. Majority of the patients, 352 (78.20%), presented through the emergency department. Pneumonia was the commonest source of infection 293 (65.10%). There were 92 deaths (mortality rate of 20.44%). The majority of patients, 371 (82.44%) manifested a SOFA score of  $\geq$ 2 and 190 (42.22%) had a qSOFA score of  $\geq$ 2. SOFA score was superior in predicting hospital mortality compared to qSOFA with an AUROC = 0.799 [0.752 - 0.846] vs 0.694 [0.691 -0.748,  $P < 0.001$ ].

### **Conclusion**

A SOFA score of two or more is better than qSOFA score in predicting in-hospital mortality among adult critical care patients with suspected infection. This finding suggests that SOFA is an appropriate tool in the initial diagnosis sepsis in a critical care setting in a developing country.

## **Factors influencing TB treatment and management: insights from patients' experiences in Nairobi City County**

Alex Gateri, *African Population and Health Research Center (APHRC)*

### **Background**

Tuberculosis (TB) is a global health problem with serious health and social implications which produce unique experiences for the patients. Kenya is one of the sub-Saharan

countries with a high TB burden. The patients' experiences fundamentally influence treatment outcomes by promoting or undermining adherence. Unsuccessful treatment has grave public health consequences and can be mitigated by aligning treatment experiences with intended health outcomes. Understanding the lived experiences of persons with TB is important for appropriate intervention and countrywide management. The study sought to describe the lived experiences of TB patients in Nairobi City County, Kenya and how these influence treatment course.

## **Methods**

A cross-sectional design, using a qualitative approach was used. Data were collected in February 2016 in two facilities in Nairobi: Mbagathi Hospital and Ngara Health Centre. Narratives and key informant interviews were used to collect data. A total of 40 persons with TB were interviewed twice, first at the healthcare facility and second in their homes during follow-up. 40 home observations were also made in the follow-up interviews. Key informant interviews with 4 TB healthcare providers were conducted. Data were analyzed using content-thematic analysis.

## **Results**

There are socio-economic, structural and medication-related factors that characterize experiences for persons with TB. Patients experience stigma arising from perceptions around TB and lack of family and social support. Persons with TB also face financial constraints in the treatment process and their daily life is undesirably altered in the treatment experience. Although there is good patient-healthcare provider relationship, persons with TB have to deal with long treatment regimens, high pill burden, and the long queues when seeking treatment services in the health facilities. Collectively, persons with TB experience social exclusion and low quality of life that demote successful treatment.

## **Conclusions**

The study concludes that TB management programs should account for factors that influence the lived experiences of TB patients to facilitate effective treatment and healing. The factors are barriers to effective treatment and management. Strengthening family and social support and removal of the structural barriers may influence the patients' positive experience and promote treatment adherence for successful TB management.

## **Factors associated with mortality among TB patients in Ugunja sub-county 2014-2017 in Western Kenya**

Margaret Maureen Atieno, *Ministry of Health, Kenya*

## **Background**

Tuberculosis (TB) remains one of the world's biggest public health threats. In 2017 10 million people were diagnosed with TB and 1.6 million died from the disease. In 2017, Siaya County recorded the highest TB mortality rate at 14%. Identifying common risk factors associated with death following diagnosis of TB is important to predict prognosis

in TB patients and planning effective interventions to reduce death rates. We, therefore, sought to determine factors associated with mortality among registered TB patients in Ugunja Sub-County in Siaya County.

## **Methodology**

This was a retrospective record review of registered patients receiving anti-TB treatment in 2014-2017.

## **Results**

Of 772 registered TB patients, 433 (56%) patients were male, 722 (93.5%) were new cases compared with 50 (16%) retreatment cases. There were 491 (63.6%) TB/ HIV co-infected patients. There were 427 (55.3%) TB patients who were undernourished. Overall, 80 (10%) TB patients died. Factors associated with increased mortality included being HIV positive (RR =1.5) and undernutrition (RR=1.5). Cumulative mortality rates were 6%, 2%, and 1.6% at one, two and six months respectively, after starting TB treatment.

## **Conclusion**

There was high mortality especially in the first two months of anti-TB treatment. The relative risk of death among TB/HIV and TB/undernourished patients was the same. TB program activities should be integrated with HIV and Nutrition to reduce mortality among TB patients.

## **Patients' perspective on the non-urgent use of the emergency department in Kenya**

Caroline Robai, *Aga Khan University, Nairobi*

## **Background**

Globally, there is an increasing demand for emergency department (ED) care in many countries accompanied by the dire need to optimize scant resources. Sub Saharan Africa (SSA) is facing a rapid surge in the prevalence of non-communicable diseases (NCDs) compounded by an already prevailing significant problem of communicable diseases and injuries. This has led to increased demand for emergency care expertise owing to acute complications of all these conditions. The impact includes ED overcrowding, increased healthcare costs, extended waiting periods and overstretched essential services. To mitigate this, EDs must be utilized appropriately to continue providing quality emergency medical care services. The objectives of the study were to establish why patients visit the ED in a tertiary hospital for non-urgent care, whether they understood the role of the ED and their perception of the urgency of their presenting medical conditions.

## **Methods**

An exploratory qualitative study was conducted. In-depth interviews were conducted among patients triaged as non-urgent using an interview guide. Interviews were audio-recorded, transcribed verbatim and analyzed thematically using NVivo 12 software.

## **Results**

Thematic saturation was reached after interviewing a total of 24 patients. The results showed that several factors contributed to the non-urgent use of the ED: lack of awareness on alternative places to seek care, familiarity with the ED, closure of other departments after hours and on weekends and teamwork by ED staff. Most of the patients understood that the ED was a place where patients needing urgent medical attention with life-threatening conditions were attended to and such patients were not required to queue. Majority of the patients felt their conditions were life-threatening.

## **Conclusion**

Several reasons were identified in this study as to why patients with non-urgent medical conditions sought care in the ED. This was despite the majority of the patients being able to correctly define the role of the ED. There is a need to continuously educate patients on which conditions are appropriate to be seen in the ED and provide mechanisms of referring patients with non-urgent conditions to alternative sites of care.

## **Utility of touch imprint cytology in the intraoperative diagnosis of head and neck masses in patients attending surgical clinics at Kenyatta National Hospital**

Everlyne Kutolo, *University of Nairobi*

## **Background**

Intraoperative consultation has offered an important service inpatient management. There is a need for minimal turnaround time. Touch Imprint cytology (TIC) is one of the upcoming methods that can be used in the diagnosis of malignant and benign lesions in a shorter period though the histopathology remains the gold standard. The primary goal of our study was to evaluate the role and accuracy of TIC in the diagnosis of various head and neck lesions and to correlate the cytological diagnosis with final histopathological findings.

## **Methods**

Biopsy procedure was performed in 139 patients who presented with different lesions of the head and neck at the hospital surgical clinics. Intraoperatively, after obtaining the fresh biopsy specimen and before placing them in fixative, imprint smears were prepared and processed. Cytological findings were then compared with the final histopathological diagnosis.

## **Results**

With a male to female ratio of 1.2:1; 139 patients presented with different lesions of the head and neck. Satisfactory smears were obtained from 134 (96.4%) while unsatisfactory rates had 5 (3.6%) cases thus reported as non-diagnostic. The overall diagnostic accuracy of TIC in diagnosing malignant lesions was 92.1% with a sensitivity and specificity of 88 and 94.9% respectively. The measure of agreement based on Cohen's Kappa analysis showed a Coefficient (k) value of 0.838; which represented an excellent strength of agreement.

## **Conclusion**

Intraoperative consultation using TIC technique of surgical specimens is recommended as a valuable procedure for the initial evaluation of specimens as it is simple, inexpensive, convenient and comfortable to the patient. Moreover, it can offer a rapid and accurate diagnosis for further management of the patient.

## **Influence of health insurance on clinical decision making among Kenyan doctors**

Elijah Yulu, *Kabarak University*

### **Background**

Most Kenyans lack health insurance and thus find it difficult to raise money for health expenditure. That being the case, studies elsewhere have shown disadvantage to uninsured individuals in terms of health care given. There is inadequate research in Kenya to evaluate whether lack of insurance affects the kind of health care rendered. This study examined variations in clinical decisions among Kenyan doctors depending on the health insurance status of patients and the impact thereof.

### **Methods**

A cross-sectional survey was conducted on Kenyan doctors between August 2018 and October 2018 using an online questionnaire. Respondents were contacted via the Kenya Medical Association's mailing list. They estimated how often they changed their clinical decisions based on the insurance status of their patients. Further, on a scale of -3 (harm) to +3 (benefit), respondents rated their perceived impact of the decision change. Since both independent and dependent variables were dichotomous categorical, a chi squared test was used to measure significance for a p value < 0.05.

### **Results**

Completed responses were 158 representing 20% response rate. Results revealed that 84% of doctors changed their clinical decisions based on the health insurance status of the patients. There was a significant difference in clinical decision changes between uninsured patients and those insured (71% vs. 93% respectively;  $p < 0.05$ ). Decision change was associated with possible harm; more in uninsured (-0.48) compared to insured (-0.34,  $p > 0.05$ ). Doctors in private practice were more likely to change decisions based on the health insurance status than those in public practice (94% vs. 17% ;  $p < 0.05$ ). The impact was perceived to be beneficial for those in private hospitals (average score = +0.2) but harmful in public hospitals (average score = -0.2). Health insurance did not influence clinical decisions among respondents in emergency conditions ( $p > 0.05$ ).

### **Conclusion**

Clinical decision making of Kenyan doctors is influenced by health insurance. Insured patients were likely to receive better care than the uninsured. A recommendation to the government is to formulate policies that ensure that healthcare is universal regardless of insurance status.”

## **Diagnostic accuracy of multi-parametric MRI in diagnosis of clinically significant prostate cancer**

Mariah Obino, *Aga Khan University, Nairobi*

### **Background**

Traditionally, the diagnosis of prostate cancer has been based on an elevated prostate-specific antigen or an abnormal digital rectal examination and confirmed histologically following prostate biopsy. This has led to several men without cancer or with clinically insignificant disease undergoing unwarranted prostate biopsies and suffering consequent complications. Pre-biopsy multi-parametric MRI plays a vital role in determining men with clinically significant cancer who need a biopsy and those with a negative MRI who can safely avoid an unwarranted biopsy. Whereas studies on the value of multi-parametric MRI have been done elsewhere, there is variation in the prevalence of prostate cancer in different populations which affects the predictive value, varying thresholds in defining clinically significant cancer as well as possible differences in tumour biology with our population. This study was to determine the diagnostic accuracy of multi-parametric MRI in differentiating clinically significant and clinically insignificant prostate cancer using histology as the reference standard.

### **Methods**

The diagnostic accuracy of multi-parametric MRI using transrectal ultrasound-guided biopsy as the reference test was established for 133 men who underwent multi-parametric MRI and biopsy between January 2016 and March 2019. The multi-parametric MRI images were reviewed and reported by two independent consultant radiologists. Clinically significant cancer was defined as PI-RADS score of  $\geq 3$  and Gleason score  $\geq 3 + 4$  (grade group  $\geq 2$ ).

### **Results**

Multi-parametric MRI of the prostate was found to have 92% sensitivity, 47.8% specificity, 86.8% negative predictive value and 62% positive predictive value.

### **Conclusion**

Multi-parametric MRI has high sensitivity and a negative predictive value validating its use in the pre-biopsy evaluation of men at risk of prostate cancer to safely avoid unnecessary prostate biopsy and to guide biopsy of suspicious lesions.

## **Prevalence and factors associated with female sexual dysfunction amongst women using hormonal and non-hormonal contraception at the Aga Khan University Hospital, Nairobi**

Momin Butt, *Aga Khan University, Nairobi*

### **Background**

Female sexual function is a complex phenomenon. It integrates all the body systems and

is influenced by a variety of factors. Contraceptives have been shown to have variable effects on female sexual function, but there have not been adequately powered studies on this in our setting. The prevalence of female sexual dysfunction (FSD) has been shown to vary among different population subsets globally. The associations of different factors with FSD have also shown variable conclusions that are not generalizable to our setting. In Kenya, there is a high discontinuation rate of contraception and this is mainly attributed to its related side effects. This has created a need to study the prevalence of, and the significant factors affecting FSD among those using contraception in our setting.

## **Methods**

The study aimed to determine the prevalence of FSD among women using hormonal and those using non-hormonal contraception and to examine the factors associated with it. A cross-sectional study was conducted at clinics within AKUHN. Consecutive sampling of women of reproductive age using either hormonal or non-hormonal contraception was done. Two questionnaires, one on demographic profiles and the other on the female sexual function index (FSFI) were completed.

Independent associations of the factors with the outcome variables were assessed using Chi square test of association and variables with a  $P < 0.25$  used in the multivariate analysis. Factors associated with FSD were determined using binary logistic regression.

## **Results**

A total of 566 participants were included. The prevalence of FSD among those using hormonal and those using non-hormonal contraception was 51.5% and 29.6% respectively ( $P < 0.0001$ ). Using logistic regression we found that the factors that were associated with FSD were presence of chronic illness and use of chronic medication, self-employment and unemployment status, alcohol intake and history of miscarriage(s).

## **Conclusion**

There was a high prevalence of FSD in our setting. There was a strong association between hormonal contraception and FSD amongst those using it. More studies on this topic in different settings are recommended to investigate the effect of each type of hormonal method on FSD.

## **Assessing the cost-effectiveness of contraceptive methods from a provider perspective: a case study of Kiambu County Hospital, Kenya**

James Kiragu, *University of Nairobi*

## **Background**

Kenya's Contraceptive Prevalence Rate (CPR) at 53% remains low. The Kenya Family Planning Costed Implementation Plan (CIP) 2017-20 estimates that 300 million dollars are required between 2017 and 2020 to achieve the national CPR target of 58%. Studies, mainly from developed countries, have shown long-acting contraceptive methods to be more cost-effective than short-acting methods. This may not be the case in developing

countries such as Kenya. This study, therefore, aimed to assess the cost-effectiveness of contraceptive methods used in the Kenyan context for better decision making.

## **Methods**

This was a cross-sectional study conducted in Kiambu County Hospital between 1st July and 31st October 2018. A purposive sampling of Healthcare Providers (HCP) and systematic sampling of service delivery sessions of each of the following methods was done: IUCD, Implants, DMPA, and CoC Pills. The cost was determined using activity-based costing model with labour, overheads, equipment, capital and workload as the dependent variables and then divided by Couple-Years Protection (CYP) conversion factors for each method (independent variables). The methods with a lower cost of service delivery per CYP were considered to be more cost-effective.

## **Results**

The IUCD was found to be the most cost-effective method at KeS 502 (4.88 USD) per CYP, followed by the 2-Rod Implant at KeS 655 (6.36 USD), the 1-Rod Implant at KeS 978 (9.50 USD), DMPA at KeS 2,439 (23.68 USD), and CoC Pills at KeS 3,976 (38.61 USD) was the least cost-effective. This was 2 to 8 times less than the results of a similar study in Iran but pills were twice as expensive. The initial cost of providing services was higher for the long-term than short-term methods. Client costs would have significantly added to the cost per method without changing the overall cost-effectiveness pattern observed since the same fundamentals drive all the cost.

## **Conclusion**

Long-term contraceptive methods are more cost-effective than short-term methods, despite the higher initial cost of service delivery. Given the large inter-county disparity in CPR (2% - 76%) and budgetary allocations to contraceptive services, there is a need for each county to develop its contraceptives CIP, allocate sufficient budget and promote the use of long-term methods.”

## **Is there an association between maternal vaginal microbiota and placental inflammatory lesions in preterm birth? A case control study**

David Atandi, *Aga Khan University, Nairobi*

## **Background**

Preterm birth continues to be a significant contributor to neonatal mortality and morbidity despite diverse unique interventional strategies. There is a need for a better understanding of differences and influences of the now characterized vaginal microbiome on terminal inflammatory effects in the uterine microenvironment in term and preterm labour to improve on current strategies. How the existence of a postulated placenta microbiome also affects this understanding should be considered. This study aimed to explore the association between the maternal vaginal microbiota and placental inflammatory lesions in preterm labour and to determine the presence of a placenta microbiome.

## Methods

In this nested study, we enrolled 36 case and control placentas in a 1:1 ratio matched for age and parity from women delivering preterm between 26 to 36 weeks gestation. The profile of bacteria in the vaginal tract and placenta was characterized and compared through 16S rRNA sequencing. Using a bioinformatics approach phylogeny trees were created, Beta-diversity group distances were calculated using Permutational Multivariate Analysis of variance and Bray-Curtis dissimilarity indices were measured. All histologic inflammatory lesions were graded and staged as per recommended latest consensus guidelines on reporting placental lesions. Fisher's exact test and logistic regression analysis was performed to compare lesions in preterm and term birth

## Results

Preterm placentas were associated with greater rates of inflammation (43.3%) compared to term placentas (23.3%). Acute histologic chorioamnionitis accounted for the greatest proportion with higher rates in preterm (33.3%) than term placentas (6.67%). Placenta microbial samples had a sequence read success rate of only 5.7% bearing similarity to oral, environmental and vaginal tract bacteria.

## Conclusion

Acute histologic chorioamnionitis was associated with preterm labour.

There is a lack of evidence to support the existence of a placenta microbiome.

## Vaginal microbiota in women with spontaneous preterm labour versus term labour

Edgar Gulavi, *Aga Khan University, Nairobi*

## Background

Preterm birth is the leading cause of perinatal morbidity and mortality worldwide, with approximately 15 million preterm births every year. Kenya has a 12% preterm birth rate with about 190,000 preterms every year. The female lower genital tract bacterial microbiota plays a vital role in maternal and neonatal health. An association between altered vaginal microbial composition and preterm birth has been demonstrated in previous studies. However, findings in terms of the composition and diversity of these bacteria have differed. With the increased availability of gene sequencing-based techniques, vaginal microbiota changes have emerged as an area for research focus in preterm birth. The objective of this study was to compare the vaginal microbiota of women in spontaneous preterm labour with those with term labour using 16S ribosomal RNA gene sequencing.

## Methods

A case control design was used to enroll women admitted in spontaneous labour between 26 and 36 weeks and controls matched for age and parity who presented in labour from

37 weeks of gestation, at Aga Khan University Hospital, Nairobi, Kenya. Vaginal swabs were collected and the vaginal microbiota was assessed using 16S ribosomal RNA (rRNA) gene sequences.

## **Results**

In total, 100 participants were recruited with 50 cases of preterm labour and 50 matched controls. Gene sequencing and analysis was done on 46 cases and 19 controls as part of the initial batch of data analysis. Of the 65 vaginal samples sequenced, 52 had high-quality bacterial reads while 13 samples had “weak” gene amplification. The vaginal microbiota in both study groups revealed a community rich in the *Lactobacillus* genus; 90.4% of the samples consisted of different *Lactobacillus* species including Unclassified *lactobacillus* (n=35), *L. iners* (n=23), *L. helveticus* (n=18), *L. vaginalis* (n=17), *L. mucosae* (n=2), *L. zeae* (n=1) and *L. coleohominis* (n=1). There were no differences in the community richness of *lactobacillus* between the term and preterm groups. Other non-*lactobacillus* vaginal microbiota relative abundance compositions were not significantly different between women who had preterm versus term deliveries.

## **Conclusion**

This study demonstrated a spectrum of diversity in the vaginal microbiota of women with term and preterm labour with no clear evidence of any specific microbiota composition patterns that are associated with preterm labour.”

## **Acceptability and adequacy of vaginal self-sampling for HPV DNA testing in cervical cancer screening among women attending tertiary hospital clinics in Nairobi, Kenya**

Sagal Salad, *Aga Khan University, Nairobi*

## **Background**

Cervical cancer is a main concern of women’s health globally. In Kenya, Cervical cancer is the second most common cancer in women and the leading causes of cancer-related deaths. Several screening methods exist including cytology, human papillomavirus DNA test and visual inspection with Acetic Acid or Lugol’s Iodine (VIA/VILI). The current screening rate uptake in Kenya is poor, HPV DNA self-sampling may have a role in increasing the screening uptake as many studies have shown that self-sampling for HPV DNA testing is acceptable, though some others favoured over self-sampling. This study aims to assess whether vaginal HPV self-sampling is acceptable to women and if the results are adequate compared to cervical samples taken by a health care provider (HCP). The primary objective of the study was to determine the acceptability of vaginal self-sampling for HPV DNA testing in cervical cancer screening among women attending tertiary hospital clinics in Kenya. The secondary objective was to determine the adequacy of self-sampling for HPV DNA compared to HCP sampling.

## **Methods**

A cross-sectional study was conducted at the gynaecology clinic from December 2018 to

February 2019. One hundred twenty-four (124) women between 30 to 65 years of age were recruited. Women underwent self-sampling for HPV DNA, HCP sampling and Pap smear. Afterward, the participants filled a post self-sampling acceptability questionnaire. A Likert scale was used to assess the patient's acceptance of self-collected sampling.

## **Results**

The mean age of the participants was 40.3 years. The overall acceptability score for self-sampling was 23.2 out of 25 indicating a high acceptability rate for HPV DNA self-sampling. For the adequacy, a Cohen kappa of 0.935 was found which indicates a high level of agreement among the self –sampling and HCP collected samples. The HPV DNA prevalence was 15.3% in HCP samples and 13.7 in self-samples.

## **Conclusion**

The study demonstrated that HPV DNA self – sampling was highly acceptable and the concordance rate was high between the self –sampling and the HCP sample results. Therefore, it is hoped that self- collection may have the potential for increasing cervical cancer screening in Kenya.

# POSTER PRESENTATIONS

**Characterization and antibiotics susceptibility patterns of toxigenic vibrio cholerae isolates from Kisumu County, Kenya**

Silas Awuor, *Kisii University*

**Quality improvement for cancer pathology: does sampling retinoblastoma tumor for genetic testing lead to histology artefacts?**

Barclay Obiero, *University of Nairobi*

**Barriers to definitive hyper acute management of stroke at a tertiary facility in Nairobi, Kenya**

Caroline Mithi, *Aga Khan University, Nairobi*

**Magnitude of screening for gestational diabetes mellitus in an urban setting in Tanzania**

Akampa Mukuwe, *Aga Khan University, Tanzania*

**Prevalence of suspicious mammographic calcifications in newly diagnosed breast cancer patients at Aga Khan University Hospital, Nairobi**

Mariam Omar, *Aga Khan University, Nairobi*

**Sleeping with tuberculosis: do over-crowded university hostels in Kenya increase TB transmission among youths? A cross-sectional survey**

Teresia Maina, *Pwani University*

**Iron homeostasis in children with protein-energy malnutrition: a systematic review and meta-analysis**

Kevin Juma, *Kenya Medical Research Institute (KEMRI)*

**The relationship between gestational diabetes and a positive depression screen**

Herbert Ozelle, *Aga Khan University, Nairobi*

**Complementary feeding: is it the forgotten factor of the first 1000 days of nutrition?**

Catherine Njeru, *Aga Khan University, Nairobi*

**Prevalence and risk factors of Human Herpes Virus Type 8 (HHV-8), Human Immunodeficiency Virus-1 (HIV-1) and Syphilis among female sex workers in Malindi, Kenya?**

Miriam Nzivo, *Jomo Kenyatta University of Agriculture and Technology (JKUAT)*

**Antimicrobial susceptibility pattern of Acinetobacter isolates from patients in Kenyatta National Hospital, Kenya**

Victor Moses, *University of Nairobi*

**Clinical profile and outcome of patients with acute kidney injury requiring Hemodialysis: two years' experience at a tertiary hospital in Rwanda**

*Benedicte Ndayishimiye, Kirehe District Hospital, Rwanda*

**Delivering difficult news in a tertiary level hospital in sub-Saharan Africa: a consensus study among residents**

*Karishma Sharma, Aga Khan University, Nairobi*

# BIOGRAPHIES

## KEYNOTE SPEAKERS



**Prof Dalton Wamalwa** is an Associate Professor and Chair of the department of Paediatrics and Child Health at the University of Nairobi. He received his undergraduate training in Medicine and post-graduate training Paediatrics at the University of Nairobi and undertook Masters training in Public Health (Epidemiology major) and an International Health certificate at the University of Washington, Seattle. He has led several funded research studies with focus on paediatric HIV and related conditions; these include longitudinal treatment cohorts at the Kenyatta National Hospital.

Dr Wamalwa is currently the PI of two NIH funded training grants. He is also a co-investigator on 3 NIH-funded studies along with colleagues from the University of Washington. Dr Wamalwa is a member of the National AIDS and STI Control Program (NASCO) Technical working group on paediatric care and treatment. He has previously directed graduate student research at the Department of Paediatrics and has directly mentored over 70 post-graduate students complete their research dissertations. He has co-authored over 90 publications in peer reviewed international scientific journals.



**Dr Sikolia Wanyonyi** is an Assistant Professor and Consultant in Obstetrics, Gynaecology and Fetal Medicine at the Aga Khan University Hospital, Nairobi. He is currently the section head of obstetric services in the hospital. He obtained his primary medical qualification from Moi University, Eldoret; Kenya. After completing his internship at the Machakos General Hospital, he joined the Aga Khan Hospital, Nairobi as Senior House Officer in the Department of Obstetrics and Gynaecology. He subsequently enrolled for the post-graduate medical programme and obtained his Master of Medicine in Obstetrics and Gynaecology in 2010 and the membership of the Royal College of Obstetricians and Gynaecologists of the United Kingdom in 2011. Dr Sikolia undertook a 2-year clinical research fellowship at the University of Oxford, UK, dividing his time equally between clinical duties at the Oxford University Hospitals NHS trust and research work with the INTERGROWTH 21st project. During this period he was also involved in quality control for an obstetric ultrasound and published several articles on the subject. He has recently obtained an International Master in Maternal and Fetal Medicine with the University of Barcelona and a Diploma in Fetal Medicine from Fetal Medicine Foundation, Barcelona. He has published over 45 peer-reviewed articles and several books chapters and presented over 60 abstracts in local and international conferences. He is a member of the International Society for Ultrasound in Obstetrics and Gynaecology (ISUOG), the Fetal Medicine Foundation (FMF) and the Kenya Obstetrical and Gynaecological Society (KOGS).

# JUDGES



**Prof Elizabeth Anne Bukusi** is Chief Research Officer at the Kenya Medical Research Institute (KEMRI), a Research Professor at the University of Washington (Departments of Obstetrics and Gynecology and Global health), an honorary lecturer at Aga Khan University in Nairobi (Department of Obstetrics and Gynecology) and Volunteer Clinical faculty – Professor at the University of California San Francisco (Department of Obstetrics, Gynecology & Reproductive Sciences). She is a certified IRB Professional and her primary areas of interest in research focus on sexually transmitted infections, reproductive health, and HIV prevention, care and

treatment. She also has a keen interest in research and clinical ethics/ research regulatory systems. Prof Bukusi earned her general medical degree and Masters in Obstetrics and Gynecology degree from the University of Nairobi. She then earned a certificate in international health, MPH and a PhD from the University of Washington's Department of Epidemiology; a post graduate diploma in Research Ethics from the University of Cape Town and a Masters in Bioethics from Centre for Bioethics and Culture at the Sind Institute of Urology and Transplantation in Karachi. She is a member of the Kenya National AIDS Control Council HIV prevention Task force and a member of the Board of Management of the South African Medical Research Council). She also serves on the Advisory Board of International Centre for Reproductive Health (ICRH), is a trustee for the HIV Trust, and an Elected Fellow of the African Academy of Sciences (FAAS).



**Dr Walter Jaoko** is a Physician and Professor of Medical Microbiology and Tropical Medicine at the University of Nairobi. He is also the Director of KAVI-Institute of Clinical Research, at the University of Nairobi, and has since 2017 been an Extraordinary Professor of Medicine at Stellenbosch University. He obtained his undergraduate degree in medicine from the University of Nairobi School of Medicine in 1986, his Master's degree in Tropical Medicine from the University of Liverpool's School of Tropical Medicine in 1993 and his PhD in Medical Microbiology from the University of Nairobi in 2000.

He worked with the Ministry of Health of the Government for Kenya for 2 years before joining the University of Nairobi as an Assistant Lecturer, a faculty trainee position in 1989 and rose through the ranks to become Professor. He has conducted clinical research in various aspects of infectious diseases transmission, treatment and control for the past 30 years, publishing over 150 articles in peer-reviewed scientific journals. He has been involved in HIV vaccine research since 2001 and tested a variety of HIV candidate vaccines in phase 1 and 2 clinical trials either as a Principal Investigator or a Co-Investigator. Prof. Walter Jaoko also has a keen interest in health research ethics, and the promotion of ethical standards in the conduct of health research in developing countries, and serves as a member of the research ethics committee of Strathmore University. He was recently awarded a research ethics grant by the European and Developing Clinical Trials Partnership (EDCTP) for the strengthening of research ethics in Kenya.



**Dr Shukri Mohamed** is a public health specialist at the African Population and Health Research Center with over nine years' experience in research, project planning and management, and has four years of clinical pharmacy practice experience. She attained a Masters in Public Health from the Johns Hopkins Bloomberg School of Public Health, a Doctor of Pharmacy Degree from the University Of Maryland School Of Pharmacy. She is currently pursuing her doctoral training at University of Warwick in the UK focusing on hypertension in sub-Saharan Africa. Her areas of interest include non-communicable disease prevention and control with an emphasis

on cardiovascular disease, health systems research and translating research to policy and action. Dr Mohamed has served on a number of expert/technical working group such as the technical working group on non-communicable diseases prevention policies and the Kenya Cancer Research track group. She also successfully coordinated the first ever peer-reviewed special issue from Kenya's WHO STEPS (national NCD risk factor) data. She has authored more than 20 publications.



**Dr Kevin M. De Cock** most recently has been Ebola Response Lead for the U.S. Centers for Disease Control and Prevention in the Democratic Republic of Congo; until mid-2019 he was Director of the CDC Kenya office. Dr. De Cock previously served as the founding Director of the CDC Center for Global Health (CGH). Throughout his career, he has served in a variety of positions and medical schools in the United Kingdom (University of London), the United States (University of Southern California), and Kenya (University of Nairobi).

From 2006–2009 he served as Director of the World Health Organization (WHO) Department of HIV/AIDS. Dr. De Cock received his medical degree from the University of Bristol, United Kingdom. He specialized in internal medicine and obtained extensive experience in infectious diseases, tropical medicine, and liver disease. He is a Fellow of the Royal College of Physicians (United Kingdom); former Visiting Professor of Medicine and International Health at the London School of Hygiene and Tropical Medicine; former External Examiner in Medicine, University of Nairobi; Editorial Board Member for the International Journal of Tuberculosis and Lung Disease; and Program Committee Member and former Chair, Conference on Retroviruses and Opportunistic Infections (CROI). Dr. De Cock has received a number of awards including the Chalmers Medal, Royal Society of Tropical Medicine and Hygiene; the HHS Secretary's Award for Distinguished Service in the West African Ebola response; the CDC William C. Watson Jr. Medal of Excellence among others. He has published over 360 articles and book chapters and has served as a referee for numerous scientific journals and organizations.

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