



THE AGA KHAN UNIVERSITY



# Early-Career Health Researchers' Symposium

THEME

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**Towards Better Health**

*Celebrating Rising Researchers*

DATE

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**September 29, 2018**

VENUE

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**Mövenpick Hotel &  
Residences**

#AKUresearchday

aku.edu

# OVERVIEW OF THE INSTITUTION

## MESSAGE FROM THE FOUNDATION DEAN MEDICAL COLLEGE



Welcome to the 2nd Annual Symposium for early-career researchers. We are specifically focused on early career researchers to provide a venue to share their work and get feedback from symposium participants. Not everyone who speaks will necessarily have a career as

a researcher but we expect everyone will use the skills developed through their research as life-long tools for professional development. In the health professions it is essential to always ask questions about what we do and how we can do it better. This continuing questioning about the care we provide and the translation of those questions into study designs that meets scientific and ethical quality standards is what we, as a university and health care delivery system, are here to support. Research is only of value if the results are shared and then validated through peer

review and ability to duplicate the results. The sharing of knowledge is the fundamental definition of scholarship and this symposium provides presenters the opportunity to share their work with a supportive audience of colleagues. We trust you will actively participate in this important meeting and that you will give us feedback on how to improve the 3rd Symposium coming next year!

**Prof. Robert Armstrong**  
*Founding Dean, Medical College, Faculty of Health Sciences*

## MESSAGE FROM DEAN, SCHOOL OF NURSING & MIDWIFERY



Research and scholarly activity is a major hallmark of a quality academic entity. In parallel, research capabilities and publication output are defining measures of academic performance. Institutions of learning such as ours, give early career

researchers the opportunity to develop and strengthen their knowledge base and research capacity by investing in the faculty development and support. At the School of Nursing and Midwifery, we provide faculty with PhD sponsorship, manageable teaching loads, 20% dedicated time for research and preparing publication output, as well as mentorship engagement with international universities.

Our goal is to give faculty the resources and tools that will not only motivate and nurture their passion for research, but also produce quality researchers who will contribute to the advancement of health in

local and global communities. It is only by celebrating and recognizing rising researchers that we are able to achieve access to better quality care for all.

We are excited to be a part of this symposium. We look forward to engaging and networking with early and experienced researchers in knowledge exchange, sharing of ideas and to raise awareness in the field of research during the course of the programme.

**Sharon Brownie, RN, RM, BEd, MEd Adm**  
*Professor  
Dean, School of Nursing & Midwifery, East Africa*

# OVERVIEW OF THE CONFERENCE

## MESSAGE FROM THE CHAIR, SYMPOSIUM ORGANIZING COMMITTEE



This year we dedicate our annual scientific conference to rising researchers whose work contributes to achievement of universal health coverage in one way or another. Unlike Millennium goals that were centered on individual sectors of development, Sustainable goals are broader and recognize necessity of multi-disciplinary effort for lasting sustainability. It thus matters little about the size of a study provided quality evidence has been adduced from injection of methodological rigor. Researching institutions (institutions of higher learning and research institutes) cannot afford to remain as ivory towers of knowledge but must seek to work closely with communities of policy makers and implementers to guarantee consumption of product of their hard, and often expensive work. How does one otherwise justify such time and financial investments for research data that terminates in office

and library shelves? Even worse, research findings (negative or positive) that never got published nor disseminated via other means like conferences or engagement of policy makers and users.

Our annual early career health research symposia grew out of need to nurture upcoming scientific investigators by providing them with an opportunity to show-case their work in a scientific conference deliberately design to resemble any other international forum. A scientific committee ensures all submitted abstracts undergo independent peer review process that also assigns top scorers to oral presentation and runners up to poster sessions. Each abstract is reviewed by at least two reviewers. The program provides for early and seasoned key note speakers selected from prominent scholars who work under challenging environments similar to those of other health professionals and yet excelled in research in one way or another. Presentation and question time is strictly regulated to emulate practice in international scientific meeting as way of providing early researchers opportunity to practice “real world

presentation” but in a friendly home environment.

We expect conference participants to take advantage of the meeting breaks, not only to visit poster presentations and exhibitions but to also network with fellow colleagues and seniors as a way of building bridges for future research and training collaborations. That way, younger researchers might find opportunity to be involved in larger studies and mentorship.

I wish you a most enjoyable day that may contribute to growth of your future professional career. Let me also take this opportunity to most sincerely thank members of the Organizing Committee, Scientific reviewers, judges and key note speakers for their voluntary contribution to the success of this symposium. This meeting would not succeed without financial support from various sponsors who make it possible to host without registration fees.

**William M Macharia,**  
**MB,ChB., MMed, MSc.**  
*Professor and Associate  
 Dean Research  
 Chair, Organizing  
 Committee.*

# EARLY-CAREER HEALTH RESEARCHERS' SYMPOSIUM

## Presentations Schedule

Session	Time	Topic	Presenter	Chair
<b>Opening Ceremony</b>	8:30-8:40 am	Welcome Address	Prof. William Macharia, Chair -Organizing Committee, Associate Dean Research, Medical College & School of Nursing and Midwifery, EA Aga Khan University	
	8:40-8:50 am	Opening Remarks	Prof. Robert Armstrong, Foundation Dean Medical College Aga Khan University EA	
<b>Session 1: Infectious diseases</b>	9:00-9:15 am	"Clinical trials of World Health Organization"	Mr. Nickson Murunga	Dr Gunturu Revathi
	9:15-9:30 am	"Treatment as Prevention (TasP) strategy towards effective suppression of HIV"	Mr. Erick Ochieng	

Session	Time	Topic	Presenter	Chair
	9:30-9:45 am	"The risk of infection by blood-borne pathogens (BBPs) resulting from a splash with body fluids, cuts from contaminated sharp objects and needle-prick injuries (SSNIs)"	Mr. George Ongete	
	9:45-10:00 am	"To investigate the prevalence of differential antibiotic resistance of H. pylori"	Ms. Catherine Mwangi	
	10:00-10:15 am	Questions/Discussion		
<b>Keynote Address</b>	10:15-10:45 am	<b>First Keynote Address</b>	Dr. Ambrose Agweyu, BSc, MChB, MSc, Mmed, PhD, KEMRI-Wellcome Trust Research Programme	Prof William Macharia.
	<b>10:45-11:00 am</b>	<b>TEA BREAK</b>		
<b>Session 2: Non-Communicable Diseases &amp; Diagnostics</b>	11:00-11:15 am	Adult malnutrition prevalence upon hospital admission varies between 10-60%"	Ms. Faith Munyi	Prof Michael Chung, and Prof. Asad Raja
	11:15-11:30 am	"Universal Health Coverage"	Dr. Rahab Mbau,	
	11:30-11:45 am	Molecular characterization of rhinoviruses in coastal Kenya for improved understanding of spread and transmission within a school setting	Ms. Martha Luka	
	11:45 am-12:00 pm	"To compare the BCS assay with IHC for ER/PR/HER2 evaluation in core biopsies	Dr. Erick Chesori	
	12:00-12:15 pm	Questions/Discussion		

Session	Time	Topic	Presenter	Chair
	<b>12:15-13:00 pm</b>	<b>LUNCH BREAK</b>		
<b>Session 3: Reproductive Maternal Newborn and Child Health</b>	13:00-13:15 pm	Sexual Health Knowledge, Attitudes and Beliefs among Nurses Working In Aga Khan University Hospital	Ms. Purity Kibathi	Prof Marleen Temmerman, & Dr. Peter Gisore
	13:15-13:30	Utilization of maternal health care services among women aged 15-49 years in Mwanza region of Tanzania: Cross-sectional baseline survey	Mr. James Orwa	
	13:30-13:45	Factors associated with development of Retinopathy of Prematurity	Dr. Annette Metho	
	13:45-14:00 pm	Comparison of prevalence of sexual dysfunction amongst women using hormonal and non-hormonal contraception"	Dr. Momin Butt	
	14:00-14:15 pm	Evaluation of Neonatal Resuscitation after HBB Training among Nurses and Midwives in Selected Hospitals in Central Uganda	Ms. Mary Namuguzi	
	14:15- 14:30 pm	"Sickle Cell Anemia"	Ms. Shamim Namukasa	
	14:30-14:45 pm	Questions/Discussion		
<b>Keynote Address</b>	14:45-15:15 pm	Second Keynote Address	Prof Peter Gichangi, BSc, MBChB, MMED (O/G), Ph.D. Associate Professor, University of Nairobi. Director, International Centre for Reproductive Health Kenya.	Prof. William Macharia

Session	Time	Topic	Presenter	Chair
<b>Session 4: Poster Session</b>	15:15-16:05	Poster Summaries	Festus Nyasimi Abubakar Abdillah Rajiv Patel Brenda Oseno Beth Waweru Naomi Wambugu	Dr Jasmit Shah
	<b>16:05-16:20</b>	<b>TEA BREAK</b>		
	16:20-17:00	Poster Summaries	Joan Ahimbisibwe Caroline Bundi Gregory Obala Stella Njenga James Kang'ethe Paul Kosiyo Brigid Chepkoech Batula Abdi	Dr Eunice Ndirangu
<b>Session 5: Judges Remarks &amp; Awards presentation</b>	17:00-17:10	Judges' Remarks	Judges	
	17:10-17:20	Presentation of Awards	Prof Sharon Brownie Dean, School of Nursing and Midwifery, Aga Khan University EA	
	17:20-17:30	Vote of Thanks and Closure	Prof. William Macharia, Chair -Organizing Committee, Associate Dean Research, Medical College & School of Nursing and Midwifery, EA Aga Khan University	

# POSTER PRESENTATIONS

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- 1**     **TOPIC:** Influenza B virus (IBV) cause substantial morbidity and mortality in seasonal epidemics

**PRESENTER:** Mr Festus Nyasimi  
Kemri-Wellcome Trus
- 2**     **TOPIC:** Virological suppression among HIV infected adolescents and youths receiving ART in the national teaching and referral hospital in Kenya

**PRESENTER:** Mr James Kang'ethe  
Kenyatta National Hospital
- 3**     **TOPIC:** Reference intervals for prothrombin time and activated partial thromboplastin time derived from black African blood donors at a university teaching hospital in Nairobi, Kenya

**PRESENTER:** Dr Abubakar Abdillah  
Aga Khan University
- 4**     **TOPIC:** Acinetobacter Infections: A Retrospective study to Determine In – Hospital Mortality Rate and Clinical Factors Associated with Mortality

**PRESENTER:** Dr Rajiv Patel,  
Aga Khan University
- 5**     **TOPIC:** Evaluation of mosquito salivary antigens as serological markers of human exposure to P.falciparum infected A.gambiae mosquitoes

**PRESENTER:** Ms Brenda Oseno  
Kemri-Wellcome Trust & Egerton University
- 6**     **TOPIC:** Assessment of Participation on Nursing Faculty in Faculty Clinical Practice

**PRESENTER:** Ms Beth Waweru  
Aga Khan University Hospital-Nairobi
- 7**     **TOPIC:** Determinants of adherence to ARVs among HIV positive adolescents at Comprehensive Care Centre, Gertrude's Childrens Hospital, Kenya

**PRESENTER:** Mrs Naomi Wambugu  
Gertrude's' Childrens' Hospital

- 8 **TOPIC:** Assessing knowledge on antibiotic resistance, describing considerations used in antibiotic prescription practices and perceptions towards antimicrobial stewardship program among clinicians  
**PRESENTER:** Ms Joan Ahimbisibwe  
Kilimanjaro Christian Medical University College
- 9 **TOPIC:** Effect of iron deficiency on natural immunity to malaria and malaria vaccine responses in Kenyan children  
**PRESENTER:** Ms Caroline Bundi  
KEMRI Wellcome Trust Kilifi
- 10 **TOPIC:** Prevalence Of Metastatic Disease In Newly Diagnosed Breast Cancer Patients As Seen On Contrast Enhanced Computed Tomography Of The Chest, Abdomen And Pelvis At The Aga Khan University Hospital, Nairobi  
**PRESENTER:** Dr Gregory Obala  
Aga Khan University
- 11 **TOPIC:** Women And Maternal Health Care Providers' Perceptions, Beliefs And Attitudes Towards Use Of Epidural Analgesia For Labour Pain Relief  
**PRESENTER:** Dr Stella Njenga,  
Aga Khan University
- 12 **TOPIC:** Virological suppression among HIV infected adolescents and youths receiving ART in the national teaching and referral hospital in Kenya  
**PRESENTER:** Mr James Kang'ethe  
Kenyatta National Hospital
- 13 **TOPIC:** Evaluation of vaginal cytology through clue cell detection and Nugent's score in the laboratory diagnosis of BV in women of reproductive age  
**PRESENTER:** Mr Paul Kosiyo  
Maseno University
- 14 **TOPIC:** Time to First Antenatal Visit and Associated Factors among Pregnant Women Attending Maternal and Child Health Clinic at Kenyatta National Hospital  
**PRESENTER:** Ms. Brigid Chepkoech  
Aga Khan University, School of Nursing and Midwifery, Kenya
- 15 **TOPIC:** Factors affecting uptake Family Planning (FP) Services among the Muslim Women in Wajir County in North Eastern Kenya  
**PRESENTER:** Ms. Batula Abdi  
United Nations Population Fund

# BIOGRAPHIES

## KEY NOTE SPEAKERS



### Ambrose Agweyu

Ambrose is a Kenyan paediatrician and clinical research fellow based at the KEMRI-Wellcome Trust Research Programme in Nairobi. Working closely with the Ministry of Health in 2009, his early research involved conducting systematic reviews for a national exercise to adapt the WHO paediatric clinical guidelines using the GRADE methodology. He was later invited to support similar exercises in Uganda and Rwanda.

Following this, Ambrose was the principal investigator on a pragmatic clinical trial to study the effectiveness of alternative antibiotics for childhood pneumonia, whose findings contributed towards a major revision in the Kenyan guidelines and are likely to eventually influence practice in the region. Building on this work, he recently led a successful grant application jointly awarded by the UK MRC, DFID, NIHR and Wellcome Trust to undertake a large clinical trial comparing antibiotic treatments and supportive care strategies in critically-ill children.

As a member of the Kenya Paediatric Association and various technical panels of the Ministry of Health, Ambrose is also actively involved in advocacy on how best to implement approaches for the prevention and management of the leading causes of childhood mortality.



### Peter Gichagi

Prof Peter Gichangi expertise combines strong leadership, academic, program management and research background with in depth knowledge of reproductive health, maternal and child health, HIV/AIDS, family planning, HIV care and support and gynecological oncology issues. Prof Gichangi is Obstetrician-Gynaecologist, Associate Professor in the of Department of Human Anatomy, University of Nairobi and visiting Professor, Department of Urogynecology, Ghent University Belgium. Prof Gichangi has combined clinical services, teaching, project management and research in the field of Reproductive and sexual Health experience of 27 years. Prof Gichangi has experience working in several countries including: Kenya, South

Sudan, Somaliland, Ethiopia, Tanzania, and Namibia. Prof Gichangi areas of research focus on basic sciences in Human Anatomy; sexual and reproductive health covering sex workers, adolescents, family planning, cervical cancer, HIV/AIDS and health systems. Prof Gichangi research has covered the entire spectrum of study design from case-control to randomized controlled clinical trials. Prof Gichangi is the principal investigators for Performance, Monitoring and Accountability (PMA 2020) tracking family planning performance in Kenya; mHealth to promote FP for adolescents; prevention of commercial exploitation of children. Prof Gichangi is member of the consortium implementing the Evidence for Contraceptive Options and HIV Outcomes (ECHO) Study - a multi-center, open-label, randomised clinical trial comparing HIV incidence and contraceptive benefits in women using three commonly-used contraceptive methods. Prof Gichangi holds: BSC(HAnatomy) Hons; MBChB; Master degree in Obstetrics and Gynecology; Doctor of philosophy in Obstetrics and Gynecology and Master in Public Health (MPH). You are invited to sample Prof Gichangi bibliography: <https://www.ncbi.nlm.nih.gov/sites/myncbi/1hgqcgw0ckf/bibliography/40753573/public/?sort=date&direction=ascending>

# BIOGRAPHIES

## JUDGES

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**Prof. Hezborn Kodero**  
Research Faculty

Prof. Hezborn M. N. Kodero is a Research Faculty at The Aga Khan University, Institute for Human Development. Prior to joining AKU, Prof. Kodero was a Dean School of Graduate Studies at Rongo University, Kenya. He is involved in research and mentorship for pre- and post- doctoral fellows under the Conrad N. Hilton Foundation project. He pursued his first degree in Botany, Zoology and Education at the University of Nairobi, Kenya. He obtain his Masters and Ph.D. degrees in Educational Psychology from the University of Alberta, Canada, on Commonwealth Scholarship. He has served as a Lecturer and Dean of the School of Education at Moi University, Eldoret. He has published numerous journal articles, successfully supervised 14 Ph.D. students, and mentored tens of masters' students. He has also attended numerous local and international conferences. His main area of research interest is on orphans and vulnerable children, particularly those affected by HIV/AIDS.



**Dr Amina Abubakar**

Dr Amina Abubakar is a senior research scientist at the Institute for Human Development. She is also an Associate Professor of Psychology and Public Health at Pwani University, Kenya and a Research Fellow at the Kenya Medical Research Institute / Wellcome Trust Research Programme. She co-leads the Neuroscience research group at KEMRI-WTRP. Dr. Amina Abubakar holds the prestigious MRC/DfID African Research Leaders award.

In 2016, she was awarded the Royal Society Pfizer Award. Her main interests are in the study of developmental delays and impairments among children exposed to various health problems such as HIV, malnutrition and malaria. A focus in her work is the development of culturally appropriate strategies for identifying, monitoring and rehabilitating at-risk children. Dr. Abubakar has been instrumental in developing various culturally appropriate measures of child development that have been used in many African countries. In addition, she is also interested in examining the prevalence of and risk factors for neurodevelopmental disorders, specifically ASD, within the African context. She has (co)-authored more than 90 peer-reviewed journal articles and book chapters. She has served on technical working groups, forums and consulted for various international organizations including the World Health Organization, National Academies of Sciences, Engineering and Medicine (USA), Save the Children, Autism Speaks and Open Society. She is actively involved in capacity building for African Scientists has supervised PhD students in Kenya, South Africa, Tanzania and Zambia.



### **Lucy Wangari Muchiri**

I am an Associate Professor in the Department of Human Pathology, University of Nairobi's School of Medicine. I have over 22 articles published or in press, many of which focus on research related to HPV or cervical cancer. I earned my PhD and my MMed (Pathology) degree from the Department of Human Pathology, and a postgraduate diploma in Biomedical Research Methods from the University of Nairobi's Institute of Tropical and Infectious Diseases (UNITID). I have had two fellowships: Cytopathology from The Health Sciences Center, University of Manitoba, Canada, and the other in Health and Behaviour Research from the Department of Social Medicine, Harvard Medical School, Boston, USA. I have conducted research on HPV infection and associated cervical neoplasia since 1993. Since 2003, I have been working on research studies on HPV and cervical cancer prevention among high-risk women in Kenya. My current research focuses on interventional studies and diagnosis of human papillomavirus (HPV) and cervical cancer in Kenya with a focus on prevention via screening and prophylactic vaccination. For the proposed study, I will conduct pathology readings on all cervical biopsies and tissue specimens obtained during study visits at clinical sites, and will work with Drs. Siobhan O'Connor of UNC and Mark Stoler of UVA to reach consensus diagnoses in the case of discrepant readings.

# ABSTRACTS

## ORAL PRESENTATIONS

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### Clinical trials of World Health Organization

By: Mr. Nickson Murunga  
Biostatistician  
The Initiative to Develop African Research Leaders (IDEAL)- KEMRI-Wellcome Trust

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#### Background

Clinical trials of World Health Organization recommended rotavirus group A (RVA) vaccines indicate lower efficacy in developing countries compared to developed nations. As vaccine impact studies accumulate from developing countries, there is need to synthesize vaccination impact evidence to inform future immunisation policy.

#### Methods

A systematic search was done in PubMed, Popline, EMBASE, Cochrane Library, and Web of Science to identify studies that investigated the impact of routine RVA vaccination in Africa between 2009 and 2017. Observational studies were eligible for inclusion. Data was extracted and a meta-analysis was done on the estimated continental RVA prevalence in under-five year-olds admissions, before and after the introduction of the vaccine and on the effectiveness of full versus partial dose of Rotarix (RV1) vaccine. Data on the impact of the vaccination programs on all-cause diarrhea were summarized in a table. The pooled odds ratios and proportions were estimated using random effects model. Risks of bias was assessed using Newcastle-Ottawa scale.

#### Results

Twenty nine publications were identified, 11 case-control studies ( 9 RV1 and 2 RV5) of which 9 were included in meta-analysis of RV1 vaccine effectiveness, 9 used to estimate proportion of RVA positive cases pre- and post-vaccine era, and 10 used to assess impact of RVA vaccine on all-cause diarrhea hospitalization. Pooled VE against hospitalization with RVA diarrhea was 42% (95% CI, 23-57) with partial dose and 57% (95% CI 47-65) with complete dose of RV1 vaccine. Only two of the case-control studies reported on RV5 VE (Rwanda 80% (95% CI 28-97), and Burkina Faso 17% (95% CI -78 to 63)). Continent-wide rotavirus detection in hospital diarrhoea admission dropped from 45% (95% CI 39-59) before RVA vaccine introduction to 25% (95% CI 20-31) after vaccine introduction.

#### Conclusion

RVA vaccine has reduced severe diarrhea in African children and the VE is close to the efficacy findings observed in clinical trials. Children receiving a complete dose are better protected than those who receive partial dose. There is need to understand the variable and mostly lower vaccine performance (57%) in Africa countries unlike in developed countries where vaccine performance was more than 80%.

### Treatment as Prevention (TasP) strategy towards effective suppression of HIV

By: Mr. Erick Ochieng  
Assistant Research Officer  
Kenya Medical Research Institute

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#### Introduction

Kenya has adopted the Treatment as Prevention (TasP) strategy towards effective suppression of HIV replication in at least 90% of patients on antiretroviral therapy and prevent onward transmission of the virus. We sought to evaluate the National AIDS & STI Control Program (NASOP) supported TasP strategy by measuring the association between viral suppression rates among pregnant HIV positive women on ART and HIV transmission rates in HIV exposed infants (HEI).

## Methods

A retrospective observational study was conducted by abstracting longitudinal data on viral load (VL) and Early Infant Diagnosis (EID) outcomes from the NASCOP database at [www.nascop.org](http://www.nascop.org). The absolute number of HIV positive pregnant women with suppressed VL in 2016 and 2017 were exported from the database on a Microsoft excel sheet under the VL tab. The monthly prevalence of positive initial PCR results for the HEI was similarly abstracted under the EID tab. These were then merged and analysed using SPSS version 25.

The association between the viral suppression rates and HIV transmission rates was established using Pearson product moment correlation.

## Results

In 2016, 3575 VL tests were conducted for HIV positive pregnant women receiving care in Kenya, out of which 81.4% had results below 1000 cp/ml and were considered suppressed with 7753 tests in 2017 and a suppression of 82%. The average prevalence of positivity for initial PCR tests for the HEI in 2016 was 5.23%, 95% CI (4.73-5.73), median 5.45% (IQR=1.5) while 2017 had an average of 3.87%, 95% CI (3.19 – 4.54) median 4.0 (IQR=2.1).

A significant negative correlation was found between viral suppression among the pregnant women and initial PCR positivity among the HEI ( $r = -0.4383$ ,  $p = 0.017$ )

## Conclusion

We show that an increase in the rate of viral suppression among pregnant HIV positive women in Kenya is associated with a corresponding reduction in the rate of transmission of the virus to HIV exposed infants. This inverse relationship provides evidence that antiretroviral treatment to reduce viral load is an effective public health intervention to prevent the onward transmission of HIV and lends credence to the TasP strategy.

## The risk of infection by blood-borne pathogens (BBPs) resulting from a splash with body fluids, cuts from contaminated sharp objects and needle-prick injuries (SSNIs)

By: Mr. George Ongete  
Nursing/ Occupational safety and health  
Aga Khan University, Nairobi

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## Introduction

The risk of infection by blood-borne pathogens (BBPs) resulting from a splash with body fluids, cuts from contaminated sharp objects and needle-prick injuries (SSNIs) is a prevalent occupational hazard amongst healthcare workers (HCWs). Little is known about the impact they have on HCWs quality of life (QOL) particularly in countries where the risk of infection is high.

## Methods

After all ethical approvals, a hospital wide survey of a Kenyan University Hospital in Nairobi was conducted. Data was collected from at risk HCWs using a self-reported online questionnaire distributed via SurveyMonkey. Additional printed copies were randomly distributed to staff in selected departments where access to computers was a challenge. Burckhardt and Anderson's 16-item Quality of Life Scale (QOLS) and a 10-item self-reported symptoms questionnaire which also explored demographic variables was used.

## Results

Of 416 HCWs who participated, 46.2% ( $n = 192$ ) had experienced SSNIs with a mean quality of life (QOLS) score of 79.2 ( $SD = 20.33$ ), lower than the score of 90 predicted for a generally healthy population. "Plans to have and rear children" item in the QOLS had the lowest mean score of 4.73 ( $SD = 1.54$ ). The relationship between symptoms and QOLS scores was explored and returned a strong positive linear correlation (Pearson's  $r = 0.753$ ). Pearson's coefficient of determination ( $r^2$ ) yielded 0.567 indicating that 56.7% of the impact on HCWs QOLS was attributable to the symptoms. The test of association between independent variables and QOLS scores revealed significant statistical association ( $p < 0.05$ ) between QOLS scores and SSNI type, anti-retroviral

(ARV) drug use, educational level and staff cadre.

### Conclusions

SSNIs clearly impact on healthcare workers' quality of life. Healthcare governance should include effective measures to prevent SSNIs associated accidents as well as appropriate management of the victims including psychological support. Staff education, use of PPEs, safety engineered devices and availability of safe disposal means are some of the measures that can reduce incidences.

### “To investigate the prevalence of differential antibiotic resistance of *H. pylori*”

By: Ms. Catherine Mwangi

### Introduction

*Helicobacter pylori* is found in half of the world's population and plays a significant role in the etiology and pathogenesis of chronic active gastritis, peptic ulcer disease and gastric cancer. The aim of the study is to investigate the prevalence of differential antibiotic resistance of *H. pylori* isolated from the antrum and corpus of dyspeptic patients; genetic diversity, virulent gene profiles and associated gastric pathologies of these strains will be assessed. Dyspeptic patients referred for gastrointestinal endoscopy at Aga Khan Hospital, Nairobi were enrolled in the study.

### Methods

Biopsy specimen from the antrum and the corpus were collected for histopathology analysis and culture. Colonies from culture were used for antimicrobial sensitivity tests (E-test strips for levofloxacin, amoxicillin, clarithromycin, tetracycline and metronidazole) and DNA extraction.

### Results

55% of male participants were *Helicobacter pylori* positive while 18% were children <18 years of age. Biopsy samples were collected from children < 5 years while 35% of the patients > 45 years. 46% of the participants were female while 54% were male. Of the *Helicobacter pylori* stool antigen test requested, 66% were *Helicobacter pylori* positive. 23% of the gastric biopsies collected were Rapid Urease Test positive while 20% had smear positive histology results. Biopsy samples that were rapid urease positive were processed for culture and 44% were culture positive. 40% of *Helicobacter pylori* were clarithromycin resistant while <10% were tetracycline resistant.

### Conclusion

With high prevalence of *H. pylori* infection rates in Kenya and increasing resistance to clarithromycin that is part of the recommended first-line antibiotic treatment regimen, studies on good knowledge of the burden of *Helicobacter pylori* and antimicrobial sensitivity patterns will enhance better understanding of treatment failure and molecular epidemiology of *H. pylori*.

### Adult malnutrition prevalence upon hospital admission varies between 10-60%”

By: Ms. Faith Munyi

Dietitian

Aga Khan University Hospital, Nairobi

### Introduction

Adult malnutrition prevalence upon hospital admission varies between 10-60%. Knowing the extent of the problem and identifying at-risk patients is a priority task

as the consequences of malnutrition negatively impact organ functions and delays recuperation from illness. There are a few studies on malnutrition in hospitalized patients in Africa and in Kenya; hence, the aim of this study was to determine the prevalence of malnutrition risk in hospitalized adult patients at the Aga Khan University Hospital in Nairobi, Kenya.

### Methods

This was part of a multi-country, multicentre, descriptive cross-sectional study with an analytical component. Adult patients (n=413) were screened (NRS-2002) upon admission and at discharge (if length of hospital stay was more than seven days), and relevant outcomes on the prevalence of malnutrition were charted. Nutritionally at-risk patients were indicated if the NRS-2002 score was

≥3. Summary statistics, appropriate analysis of variance (ANOVA) and non-parametric methods were used. The statistical significance was set at 95%.

### Results

413 hospitalized adult patients (42.4 ± 13.84 years old; 51% female) were screened on admission. 64% of these patients were admitted in the medical ward, followed by 34% in the surgical ward. The mean BMI was 27.07 ± 5.43 kg/m<sup>2</sup> upon admission. Out of the study population 45.5% (n=188) of these patients were at risk of malnutrition. The mean length of the hospitalization was 4.4 days (±5.99 SD). Upon discharge, n=48 were assessed. It was found that nutritionally at-risk patients upon discharge were 52% (25 patients). Despite the high prevalence of malnutrition, only 4% of the total population (n=18) were referred for nutritional therapy upon admission. Only 6.4% (n=12) of nutritionally at-risk patients (n=188) were referred for nutritional support.

### Conclusions

With 45.5% of all patients being nutritionally at risk upon admission, there is a need to reinforce nutritional screening and timely referral. With this data, more studies on the prevalence of adult hospital malnutrition need to be conducted in Kenya and other developing countries, applying the same screening tools. Less strict exclusion criteria needs to be applied to obtain a more accurate reflection of the true prevalence of at-risk and malnourished patients.

### Universal Health Coverage

By: Dr. Rahab Mbaui,  
Research Officer  
KEMRI- WELLCOME TRUST

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### Introduction

Kenya has prioritized the attainment of universal health coverage through the expansion of health insurance coverage by the National Hospital Insurance Fund (NHIF). In 2015, the NHIF introduced reforms in premium contribution rates, benefit package, and provider payment mechanisms. We examined the influence of these reforms on NHIF's purchasing practices.

### Methods

We conducted an embedded case study with the NHIF as the case and the reforms as embedded units of analysis. We collected data at the national level and in two purposively selected counties through in-depth interviews with participants who were purposively selected to include health financing stakeholders, facility managers and frontline providers (n=41). We also conducted focus group discussions (n=4) and documents review. We analyzed the data using a framework approach.

### Results

Our findings show that even with the new reforms, the NHIF remains a passive purchaser with potential negative implications on equity, efficiency and quality of health services. Equity in access was compromised by: 1) limited awareness of the new benefits and premiums as well as unaffordability of the new premiums for certain population groups (rural, poor, elderly, people with disabilities, unemployed and informal sector workers). 2) Differences in the benefit package between the national scheme and civil servants scheme. 3) Pro-urban and pro-private distribution of contracted health facilities, and 4) discrimination of patients in the national scheme due to perceived lower reimbursements rates. Efficiency was compromised by weak accountability mechanisms that resulted in revenue loss through unnecessary treatment procedures and fraudulent claims. Quality of care was compromised by poor monitoring of quality of services, poor service delivery infrastructure in public hospitals and rationing of services due to perceived low reimbursement rates.

### Conclusion

It is important that policy makers put deliberate efforts to align purchasing reforms with health system goals. Specifically purchasing reforms should focus on implementing and strengthening strategic purchasing actions that are aimed at improving equity, efficiency, and quality of health service delivery.

## Molecular characterization of rhinoviruses in coastal Kenya for improved understanding of spread and transmission within a school setting

By: Ms. Martha Luka  
Research Student  
KEMRI-Wellcome Trust Research Programm

### Introduction

Lower respiratory tract infections are a leading cause of mortality among children under five years in sub-Saharan Africa, and rhinoviruses (HRV) are commonly isolated viral respiratory agents associated with a wide range of disease conditions. While school-going children play an important role in the transmission of rhinoviruses, the molecular epidemiology of HRV among this age-group is poorly understood. This study aimed to characterize rhinovirus infections within a school setting in Kilifi for improved understanding of spread and transmission.

### Methods

The study setting was a public primary school in Kilifi, rural coast Kenya, which offers both early childhood and primary school education. A maximum of 8 nasal swabs per a lower-school class and 4 swabs per an upper-school class were collected weekly from acute respiratory infection symptomatic school-going children between March 2017 and April 2018. These were screened for rhinoviruses by real-time PCR. HRV-positive samples were sequenced for the region encoding the VP4/VP2 junction from which genotypes were identified against reference sequences.

### Results

HRV was detected in 16.8% (n=310/1850) of the samples tested. Lower-school classes had a higher frequency of the virus than upper school classes. Phylogenetic analysis identified 53 unique HRV-types across the three species: HRV-A, HRV-B and HRV-C. Of these 53 genotypes, some types persisted in the school population for longer periods. HRV-B70 showed the highest temporal persistence, of about twelve weeks, within this cohort. Comparison with contemporary global sequences showed that Kilifi sequences formed unique clusters, indicating geographical diversity of the virus.

### Conclusion

HRV is abundant within the school settings throughout the year. Younger age groups have a higher HRV burden. There is considerable diversity of types circulating in the school community. Comparison of the molecular epidemiology between schools, households and health centres is necessary to comprehensively understand its transmission dynamics in the community.

## To compare the BCS assay with IHC for ER/PR/HER2 evaluation in core biopsies

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### Introduction

Breast cancer is the most common malignancy in women worldwide and a significant cause of cancer related morbidity and mortality among Kenyan women.

Immunohistochemistry (IHC) is the gold standard for evaluation of ER/PR/HER2, but its availability in Kenya is limited by high operational cost. Cheaper and readily accessible molecular based testing platforms for ER/PR/HER2 have been developed. The GeneXpert®'s Breast Cancer Stratifer (BCS), is a quantitative reverse transcriptase-polymerase chain reaction (RT-qPCR) cartridge based assay that quantifies mRNA expression of ER/PR/HER2, and Ki-67.

The study aimed to compare the BCS assay with IHC for ER/PR/HER2 evaluation in core biopsies. The association of Ki-67 expression by BCS assay with tumor grade and mitotic counts was evaluated.

## Methods

Archived Core biopsy slides and Formalin fixed paraffin embedded tissue blocks of pathologically confirmed breast cancer diagnosed from April 2016 to January 2018 were retrieved at Aga Khan University's Department of Pathology and reviewed. Tissue scrolls were cut at 10µm, a single step nucleic acid extraction performed according to the BCS assay protocol and samples run on the GeneXpert® instrument.

Sensitivity, specificity, PPV and NPV with 95% CI was calculated. Agreement between the two tests and association of Ki-67 to the tumor grade and mitotic counts was evaluated.

## Results

Sensitivity, specificity, PPV, NPV and accuracy for each marker on the BCS for the 162 samples was as follows: 86.96%, 94.74%, 98.04%, 70.59% and 88.89% for ER; 90.00%, 76.47%, 87.10%, 81.25% and 85.11% for PR; 96.88%, 88.57%, 72.09%, 98.94% and 90.51% for HER2. There was moderate agreement for the 3 markers with kappa values of 0.733, 0.673 and 0.763 for ER, PR and HER2 respectively. There was no association between Ki67 expression with both tumor grade and mitotic count.

## Conclusion

The BCS assay demonstrates relatively good sensitivities and specificities for ER/PR/HER2 when compared with IHC. However, BCS assay is limited in detection of low positive ER and PR samples. There was no demonstrable utility of Ki67 in predicting tumor grade and mitotic activity. Future prospective studies using various sample types are recommended to assess utility of the assay in low resource settings.

## Sexual Health Knowledge, Attitudes and Beliefs among Nurses Working In Aga Khan University Hospital

By: Ms. Purity Kibathi  
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## Introduction

Sexual health is a concept associated with many taboos that hinder open communication. Research shows that nurses feel uncomfortable talking to patients about sexual health and therefore avoid it. This avoidance forms a barrier and prevents nurses from giving satisfactory care to patients. Physical and psychological burden of living with disease negatively affect patients' sexuality. These issues lead to depression, anxiety, feeling of social isolation, lowered self-esteem and loss of control over bodily functions that may affect sexuality. Health care practitioners through sexual assessment and discussions can discover these problems and help patients to overcome them. This study determined the sexual health knowledge, attitude and beliefs among nurses working in Aga Khan University Hospital.

## Methods

A descriptive cross sectional quantitative study was carried out using probability cluster sampling among 109 nurses. Data was collected using pretested questionnaires among nurses who met the criteria and consented to participate in the study. Data was entered into SPSS version 20. Descriptive analysis was done on the variables, as well as subgroups. Data on the main variables was summarized using means, percentages, standard deviation, frequency distributions and presented using tables, graphs, pie charts and in narrative form.

## Results

The study showed that nurses had high knowledge with 91 participants scoring 83.5 % and above on knowledge testing questions, while 3 participants scored 100%. Majority of the nurses (78%) felt that discussing sexual health is essential to patients' health outcomes and 83% understood how illness and treatment affect sexuality. Some of the participants (53%) felt that giving patient time to discuss sexual concerns is a nurse's responsibility. Despite high knowledge levels, 24% of the respondents reported that they were uncomfortable talking about sexual issues. Only 39 % felt confident in ability to address sexual concerns and few nurses (16%) reported that they gave

patients time to discuss sexuality.

### Conclusion

The study revealed that different attitudes and beliefs among nurses contribute to hindrances and barriers towards discussing sexual health despite nurses having high knowledge on the subject. Training programs to improve attitudes and beliefs will alleviate barriers associated with practice.

### Utilization of maternal health care services among women aged 15-49 years in Mwanza region of Tanzania: Cross-sectional baseline survey

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### Introduction

Improving maternal health by reducing maternal mortality/morbidity is an important component of Goal 3 of the Sustainable Development Goals (SDGs). Antenatal care services (ANC), facility delivery, and postpartum care are some of the intervention to improve maternal health outcomes. This study sought to determine maternal health services utilization and its associated factors among women of reproductive age in Mwanza, Tanzania.

### Methods

We conducted a cross-sectional study based on data collected from 1476 households in six districts of Mwanza during a multi-stage baseline survey of the IMPACT project. We analyzed data on ANC 4+ visits, health facility delivery, and postpartum care among 409 women who delivered in the two years preceding the survey. All the outcomes disaggregated by residence, age, and delivery place and wealth as explanatory variables. Factors associated with outcomes were determined using multiple logistic regression accounting for clusters and weights while adjusting for all variables.

### Results

Out of 409 women, 230 (58.2%) had at least 4 antenatal visits (ANC 4+) in the previous pregnancy, 314 (76.8%) had delivered in a health facility, and 178 (43.5%) received postpartum care. Higher education was significantly associated with ANC 4+ (OR: 1.96; 95% CI: 1.09-3.54) and facility delivery (OR: 4.62; 95% CI: 1.62-13.16). Peri-urbanity and rural were associated with significantly reduced odds of ANC 4+ (OR: 0.54; 95% CI: 0.30-0.99 and OR: 0.35; 95%CI: 0.13-0.95 respectively) and facility delivery (OR: 0.26; 95% CI: 0.12-0.56 and OR: 0.04; 95%CI: 0.02-0.12 respectively) compared to urban women. Postpartum check-up was significantly lower among mothers who were married/in union (OR: 0.40; 95% CI: 0.22-0.75) and across all levels of wealth quintiles. Women who attended the first ANC during the first trimester were more likely to delivery in health facility (OR: 2.12; 95%CI: 1.02-4.41) and receive postpartum check-up (OR: 2.86; 95%CI: 1.60-5.09)

### Conclusion

Use of maternal health services were significant associated with residence, education and wealth. Efforts targeted at less educated women and postnatal services in particular should be prioritized in maternal health care programming at community, facility, and regional levels in Mwanza Region.

### Factors associated with development of Retinopathy of Prematurity

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### Introduction

Retinopathy of prematurity (ROP) is characterized by abnormal retinal vascular growth which in its most severe form can result in blindness due to retinal detachment, and in less severe untreated forms, can result in marked visual impairment. Retinopathy of prematurity is one of the preventable causes of blindness.

**Research Question**

What are the factors associated with development of retinopathy of prematurity in three Tertiary Hospitals in Kenya?

**Study Objectives**

This study aimed to identify factors associated with development of Retinopathy of Prematurity in screened preterm babies in three tertiary hospitals in Kenya as well as the prevalence of this condition in these three hospitals.

**Study Methods**

This was an unmatched case control study, targeting records of preterm infants born between January 2010 to December 2017. Data extracted was on gestational age at birth, birth weight, gender, duration of supplemental oxygen, occurrence of sepsis, intra ventricular hemorrhage and blood transfusion. The outcome assessed was a binary variable, defined as Retinopathy of Prematurity status, Positive or Negative.

**Results**

A total of 228 patient records were included in the study. Overall prevalence of ROP was 43.3% (95% CI: 36.9%-50.1%). Approximately half, (50.8%) of the babies who were on supplemental oxygen for more than one week were ROP positive, however the proportions were similar for babies with and those without sepsis at 58.0% and 55.0% respectively. Babies who were transfused had a lower prevalence of ROP compared to those who were not transfused (48.6% vs 63.6%). Gestational age (p-value=0.002), duration of oxygen therapy (p-value=0.012), and blood transfusion (p-value=0.022) were independently associated with ROP infection.

**Conclusion And Recommendations**

The prevalence of Retinopathy of Prematurity in this study was 43.3%. Early weaning off from supplemental oxygen and judicious transfusions could possibly make an impact in reducing the prevalence of this condition. We recommend that there should be a national policy on sensitization of health workers and screening of preterm infants targeting at risk babies. Innovative ways of screening for retinopathy of prematurity such as telemedicine are currently being implemented in some resource limited countries and such strategies can be used in Kenya too.

**Comparison of prevalence of sexual dysfunction amongst women using hormonal and non-hormonal contraception"**

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**Introduction**

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 and the significant factors affecting female sexual dysfunction among those using contraception in our setting.

**Methods**

The aim of the study was to determine the prevalence of FSD among women using hormonal and 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 ( $P < 0.0001$ ). The factors that were associated with FSD were determined using logistic regression and were presence of chronic illness and use of chronic medication, self-employment and unemployment statuses, alcohol intake and history of miscarriage(s).

### Conclusions

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

### Evaluation of Neonatal Resuscitation after HBB Training among Nurses and Midwives in Selected Hospitals in Central Uganda

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### Introduction

Neonatal mortality is a major public health issue in Uganda, with birth asphyxia as the major contributor. Helping babies breathe (HBB) is an evidence-based curriculum that aims at reducing neonatal mortality in resource-limited settings. Successful resuscitation is reliant on the knowledge and skills of neonatal resuscitation among nurses and midwives, and the state of neonatal resuscitation equipment. The aim of this study was to evaluate knowledge and skills retention and the state of neonatal resuscitation equipment after HBB training among nurses and midwives in Central Uganda.

### Methodology

A descriptive cross sectional design was conducted. A total of 75 nurses and midwives participated from two selected hospitals in Central Uganda. All study participants were evaluated for knowledge retention. A subset of 22 nurses and midwives were further observed for skills retention. The state of neonatal equipment were evaluated in the two study sites.

### Results

One-third (30.7%) of the participants could not remember what routine care involves, and 21.3% could not recall when the umbilical cord should be clamped and cut. Regarding skills retention, only 27.3% of the participants were able to ventilate at a rate of 40 breaths per minute. Observation of resuscitation equipment showed that 59.1% did not have a heat source and pre-warmed towels to warm the babies, and 50% did not have a self-inflating bag and mask of appropriate size.

### Conclusion

Most nurses and midwives had trained more than 11 months before the study and had forgotten what to do during routine care. Furthermore, majority of the participants did not check equipment to ascertain appropriate size and function. Some participants lacked appropriate bags and masks of appropriate sizes for the neonates they had to resuscitate. These factors predispose neonates to risk for complications due to birth asphyxia and increase neonatal mortality. Nurse Managers should ensure that nurses and midwives working in maternity units are trained in HBB skills and have regular refresher courses; hospital administrators should also ensure regular inventory and purchase of neonatal resuscitation equipment for better neonatal outcomes.

## Sickle Cell Anemia

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### Background

Sickle cell anemia remains the most frequent and traumatizing genetic disease which continues to devastate the families of sickle cell patients both mentally and economically in Uganda with an average of 33,000 babies born annually of whom 80% die before celebrating their fifth birthday.

### Objectives

To determine knowledge, attitudes and utilization of premarital sickle cell disease screening and factors associated with screening among primigravida mothers at Mulago hospital.

### Methods

A descriptive and analytical cross-sectional study was conducted among 500 primi-gravida mothers who were enrolled systematically. Four FDGs were conducted. Eight husbands of pregnant mothers and KIs were interviewed. Knowledge, attitude and utilization of premarital sickle cell disease screening among pregnant mothers at Mulago Hospital were assessed using interview guided semi-structured questionnaires. Binary logistic analysis was done to determine factors associated with premarital SCD screening.

### Results

Majority of participants (65.4%) had adequate knowledge about PMSC. About half of them (49%) knew that sickle cell can be screened by testing of blood and only 31.2% knew that sickle cell screening involves both blood testing and physical examination. Overall, the participants had positive attitude to PMSC (72.2%) and 66% of the participants supported the view of making PMS compulsory. However, only 55(11%) had screened for sickle cell. At adjusted analysis: partner SCD status (OR=3.52, 95% CI 1.12 - 10.31), positive attitude (OR=4.88, 95% CI 2.35 - 10.13) and positive family history (OR=6.04, 95% CI 2.54- 14.35) were associated with premarital SCD screening.

Based largely on their personal experiences, participants possessed an understanding of the natural progression of SCD but had a limited understanding of the inheritance and probable risk of giving birth to a child with the disease. Barriers to successful implementation of screening for sickle cell disease before marriage were classified as personal, Minimal media attention, cost and availability of screening services.

### Conclusion

Despite the high level of knowledge and positive attitude, a small proportion had screened for sickle cell. Knowledge and attitude alone are not sufficient to promote premarital screening for SCD, so there is need to provide a comprehensive behavioral package to promote premarital screening for SCD.



