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Program/Project Purpose: Virtually all cases of cervical cancer are associated with persistent infection of high-risk serotypes of HPV. While cytology based screening programs have significantly reduced the cervical cancer incidence in high income countries they have proven ineffective in low and middle income countries (LMICs). This shortfall appears to be due to a number of factors, including the need for complex laboratory equipment, highly trained staff, informatics and logistics for follow up of results, and availability of treatment. HPV DNA testing may potentially decrease these programmatic requirements and thus presents a pragmatic and advantageous alternative for cervical cancer screening. Due to disproportionately higher rates of cervical cancer incidence and mortality, it is critical to ensure these technological advancements are feasible for LMIC's to utilize in moving past opportunistic screening and towards scaling up cervical cancer screening programs. The World Health Organization (WHO) recently released cervical cancer guidelines recommending HPV testing for screening where resources permit. Ensuring that LMIC's benefit from the new technology requires collaboration and a neutral facilitator for information flow between public and private institutions. In response to this need the National Cancer Institute of the United States Institutes of Health (NCI/NIH) and the Pan American Health Organization (PAHO/WHO) convened industry, representatives of Latin American and Caribbean (LAC) ministries of health as well as experts in the field to discuss testing options and programmatic needs. The meeting HPV testing's Role in Reducing the Global Cancer Burden was held at PAHO on May 12 and 13, 2014.

Structure/Method/Design: It included the participation of eight HPV testing diagnostic companies, representatives from six ministries of health from Latin America and the Caribbean, other U.S. Government agencies like CDC, international organizations including WHO and IARC, PATH and the Gates Foundation as well as U.S. universities working on global health.

Outcomes & Evaluation: Discussion included the implementation of an up scaling process for the region and potential mechanisms available at both PAHO and WHO that could potentially assist to make the test more affordable to Member Countries in the LAC region. Other concrete products of the meeting include the development of a document that summarizes the available HPV tests and their requirements to be used by Ministries of Health and relevant agencies in Latin America and the Caribbean and a Training Manual pertaining HPV Testing for Health Officers in Latin America and the Caribbean that is expected to be ready by early 2015.

Going Forward: The lessons learned from this meeting could be potentially applied to a similar initiative in other LMICs region including Africa and Asia.

Funding: Costs were shared between the NCI and PAHO.

Abstract #: 01NCD032

Single nucleotide polymorphisms of the renin angiotensin system linked to high prevalence of essential hypertension in the Taita tribe of Kasigau, Kenya

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Background: The rapid growth of chronic non-communicable disease (CNCD), in particular cardiovascular disease, is a significant problem in developing countries. The World Health Organization

(WHO) estimates that in 10 years global CNCD deaths will increase by 17% with the greatest increase (27%) being in Africa. Essential hypertension (EH) is a leading risk factor for vascular diseases such as stroke, myocardial infarction, and heart failure. Although managing EH in developing countries is considered a high global priority, few epidemiological and/or genetic studies exist from third world populations. As a part of Western Kentucky University's Partners in Caring: Medicine in Kenya (PiC:MiK) program, we have been able to investigate the allele frequency of five different polymorphisms of the renin-angiotensin system (RAS), the key hormonal pathway that regulates blood volume and salt, from a rural cohort of Kenyans primarily of the Taita tribe, and subsequently, evaluate the relationship between these polymorphisms and EH.

Methods: A cross-sectional study of ~200 participants was conducted using genomic DNA isolated from buccal cells and amplified by PCR with the fluorescent-based TaqMan™ SNP genotyping assay. The polymorphisms evaluated were angiotensinogen (AGT) M235T, angiotensin II receptor Type 1 (AGTR1) A1166C, hydroxysteroid(11β)dehydrogenase (HSD11β2) C534A, aldosterone synthase (CYP11B2) C344T, and the angiotensin (ACE) insertion/deletion (I/D) polymorphism.

Findings: We have determined the genotype distribution for each polymorphism as follows: AGT C/C= 0.63, C/T= 0.34, T/T= 0.03; AGTR1 A/A= 0.96, A/C = 0.03, C/C= 0.0; HSD11b2 A/A = 0.46, A/C=0.46, and C/C=0.08; and CYP11B2 T/T=0.66, T/C = 0.30, C/C =0.30. Overall, there was an over-representation of the AGT susceptible C allele and the ACE D allele.

Interpretation: In this cohort, the high prevalence of two alleles previously linked to an increased predisposition for EH, suggests they likely are an important factor driving the common occurrence of EH observed in the people of Kasigau, Kenya. To our knowledge our results are the first to identify allelic frequencies in RAS in East Africans of Taita origin. Currently, statistical analyses to correlate genotype frequencies to relative risk of EH are being conducted.

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Abstract #: 01NCD033

Prevalence of depression, substance abuse, and stigma among men who have sex with men in coastal Kenya

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Background: Mental health conditions can have a severe impact on quality of life and interfere with health-related behaviours such as medication adherence. Our aim was to determine the prevalence of depression, substance abuse, and stigma among self-identified men who have sex with men (MSM) in coastal Kenya.

Methods: A cross-sectional study was conducted at the Kenya Medical Research Institute's HIV/STD clinic in Mtwapa, Kenya. Participants were 112 self-identified MSM involved in ongoing cohort studies, who had consented to collection of health-related data. We used audio computer-assisted self-interview (ACASI) to collect data on the following psychosocial measures: depression (PHQ-9), alcohol use (AUDIT), other substance use (DAST), sexual stigma (modified China MSM Stigma Scale), HIV stigma (modified

Berger's HIV Stigma Scale), recent trauma (abridged USAID/HPI MSM Violence Screening Tool), and childhood trauma (abridged CECA). Depression, alcohol use, and other substance use were rated using validated categories of increasing severity (e.g., WHO risk zones I-IV for AUDIT) and summary scores were created for sexual and HIV stigma. Recent and childhood trauma were combined into a binary indicator of any past trauma or abuse. Spearman correlation and Wilcoxon rank sum tests were used to identify associations.

Findings: Forty-two percent of participants had moderate to severe depressive symptoms, 45% engaged in hazardous or harmful drinking behaviour, and 60% had moderate to severe abuse of other substances. Median sexual and HIV stigma scores were 11 (IQR 6-17, range 0-33) and 25 (IQR 23-29, range 11-44, seropositive exclusive), respectively. There was a positive correlation between depression category and alcohol use category ($\rho=0.33$, $p=0.0004$), and a weaker positive correlation between depression category and other substance use category ($\rho=0.22$, $p=0.0165$). Alcohol use category and substance use category had a strong positive correlation ($\rho=0.39$, $p < 0.0001$). Sexual stigma was positively correlated with depression ($\rho=0.49$, $p < 0.0001$), alcohol use ($\rho=0.39$, $p < 0.0001$), and other substance use ($\rho=0.29$, $p=0.0023$). HIV status and HIV-related stigma (among seropositives) were not correlated with any of the measures. Depression category was higher among men with a history of trauma or abuse (median 2.5 vs 1, $p < 0.0001$). Similar associations were found between trauma and alcohol use (median 1.5 vs 1, $p=0.0501$), other substance use (median 3 vs 2, $p=0.0041$), and sexual stigma (median 12.5 vs 5.5, $p < 0.0001$). Trauma was not associated with HIV status or HIV-related stigma.

Interpretation: This population of Kenyan MSM reported moderate-to-high levels of depression and of alcohol and substance abuse, and low-to-moderate levels of sexual stigma. These mental health conditions and social factors are highly inter-correlated and are exacerbated by experience of trauma or abuse. Comprehensive mental health services are needed in this population to address these issues.

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Abstract #: 01NCD034

The health cost of misdiagnosis among obstetric providers in the Philippines

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Background: There is interest in examining the pervasiveness of misdiagnosis in clinical care around the world, which is stimulating a shift in how quality deficiencies are conceptualized. While diagnostic process can potentially be studied prospectively, real clinical settings makes this a substantial practical challenge, starting with resource constraints, case mix variation, clinical uncertainty, and challenges in measuring clinician cognitive thought processes. We used a case simulation measure, the Clinical Performance and Value (CPV®) vignettes, to quantify the quality of care among obstetric providers (midwives and physicians) in an urban setting of the Philippines (Quezon City). Obstetric complications remain a major source of mortality and morbidity in the Philippines. We asked three questions: 1. What is the prevalence of misdiagnosis? 2. What are the predictors of misdiagnosis, and 3. What are the clinical outcomes associated with misdiagnosis?

Methods: We had provider rosters from 77 birthing facilities in Quezon City. A random sample of providers from the facilities was

obtained. A total of 103 providers completed each of 3 maternal vignettes (CPV® vignettes) between Jan-April 2014. The three variants of maternal case vignettes included cephalopelvic disproportion (CPD), post-partum hemorrhage (PPH), and pre-eclampsia (Pre-ec). In order to link provider clinical decision making data to patients, we examined the medical charts of providers who took the vignettes. Of the 70 patients that were linked to providers, 37 were classified as complications (defined by the presence of at least one obstetric complication as reported in the medical chart). Complications include cases with any of the following: fever, abnormal vaginal discharge, excessive bleeding, urinary incontinence, blood transfusion, perineal tears, high BP, jaundice, pallor, and prolonged labor. We examined whether providers who misdiagnosed on the vignette were more likely to have had a patient complication under their care.

Findings: The prevalence of misdiagnosis in this study group was notably high: 25.2% CPD, 33% PPH, 31% Pre-ec. Older providers had a slightly lower rate of misdiagnosis. Providers who misdiagnosed on the vignettes were more likely ($p=0.041$) to have patients with a complication (any any of the following: fever, abnormal vaginal discharge, excessive bleeding, urinary incontinence, blood transfusion, perineal tears, high BP, jaundice, pallor, and prolonged labor) than providers who did not misdiagnose.

Interpretation: Diagnosis is arguably the most important early task a clinician performs as he or she determines the subsequent course of evaluation and treatment. The implications for the patient are significant as they may translate into significant morbidity and possibly mortality. Investments in improving provider decision-making skills may be necessary.

Funding: University of Washington grant.

Abstract #: 01NCD035

Strategies for prevention and control of rheumatic fever and rheumatic heart disease in Sub-Saharan Africa: a preliminary cost-effectiveness analysis

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Background: While mortality from acute rheumatic fever (ARF) and its sequel rheumatic heart disease (RHD) appear to be declining at the global level, these conditions remain the most common cause of heart disease in children and adolescents in low- and middle-income countries. Several interventions across the natural history of ARF/RHD are effective, including primary and secondary prevention as well as heart valve surgery. We developed a cost-effectiveness analysis model to assess the most important tradeoffs among various public health interventions that should be considered in scaling up programs in highly endemic, resource-constrained settings such as sub-Saharan Africa.

Methods: We developed a decision tree to analyze five different combinations of primary and secondary prevention with or without scale-up of surgical services, and we compared these to doing nothing. We modeled the natural history of ARF and RHD as a time-dependent Markov process with health states reflecting first and recurrent episodes of ARF, ARF remission, RHD (including severe heart failure and stroke as sequelae), and mortality from ARF/RHD. We used transition probabilities and intervention effectiveness data from previously published studies. To calibrate our model, we used South African life tables and published medical and surgical costs from a population-based intervention in Cuba. We took the healthcare system perspective in our costs, and we measured outcomes as disability-adjusted life-years (DALYs), incorporating disability weights from the Global Burden of