

anthropometry, and blood pressure measurement. A fasting blood sample will be collected for blood glucose, HbA1c, and lipid profile. Participants will be invited to Dhulikhel Hospital to undergo electrocardiography, echocardiography, carotid doppler and adipose tissue measurement. Outcome measures will focus on mortality and CVD-related morbidities. Cause of death will be ascertained using hospital records and verbal autopsy while CVD events will be identified from medical records and measured during regular surveillance. Logistic and linear regression along with mixed models and survival analysis will be used to estimate factors related to risk of specific outcomes. Collaborative writing groups will be convened to develop manuscripts and publish results.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** The baseline examination is currently underway with an expected sample of 9000 adults to be completed by summer 2014 with repeat visits to occur every 2 years.

**Summary/Conclusion:** Results of the DHS will provide important data on the epidemiology of hypertension, diabetes, coronary heart disease and stroke in Nepal to help develop evidence-based programs for their prevention and treatment. Methods may be used as a model for other low-income countries that are developing plans to address this emerging epidemic.

### Noncompliance with medications among hypertensives in Ghana

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**Background:** Prevalence of hypertension in Ghana is estimated to be between 25.5% and 48% in urban areas. In spite of this growing burden of noncommunicable disease, there has been limited research into hypertension treatment patterns or noncompliance rates. This study aims to understand the factors that influence patient compliance and treatment outcomes in this region.

**Structure/Method/Design:** 120 patients were recruited between December 2012 and August 2013 at Korle-Bu Hospital in Accra. Questionnaires that collected information on age, sex, religion, occupation, socioeconomic status, monthly blood pressure medication expenditures and house ownership were administered to eligible patients who agreed to participate in the study. The eight-item Morisky scale was used to assess non-compliance; the Patient Health Questionnaire-9 was used to assess depression; the Beliefs about Medication Questionnaire was used to assess patient views about medication, and the 14-item hypertension knowledge scale was used to assess patients' knowledge about hypertension. The correlation coefficient was used to determine correlation between Morisky score and other patient variables.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** 27.73% of patients had controlled hypertension, with an average systolic BP of 151.57. The most commonly prescribed antihypertensive was a calcium channel blocker, comprising 75% of patients. Several risk factors were revealed in the aggregate data that may help explain the poor BP control. Weight is a known risk factor for hypertension, and in this patient population the average BMI was 29.95, which is borderline between the overweight and obese categories. Psychosocial stress is also a known risk factor for hypertension, and a significant number of patients in this population met criteria for depressive disorder. Based on the PHQ-9 screening, 10.83% of patients met criteria for major depressive disorder, and

14.17% of patients met criteria for common depressive disorder. This study revealed 30.25% of patients to be noncompliant with medications, and 42.02% of patients to be moderately compliant with medications, which is a lower rate than in previous studies in the region. When correlation coefficients were determined between Morisky score and various other variables, the strongest correlation was found between noncompliance and depression score.

**Summary/Conclusion:** This study suggests that, in spite of treatment, hypertension is not adequately controlled within this population. Factors that may influence blood pressure control in this cohort include high rates of obesity, underlying depression, and noncompliance with medications.

### Impacting the global trauma burden—Training laypersons in basic resuscitation in Mozambique

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**Background:** The cost of trauma remains exorbitant, accounting for over 300 million years of healthy life, along with 11% of disability-adjusted life years (DALYs) worldwide. In fact, road accidents are the number 1 cause of death among under 40-year-olds and thus responsible for the greatest loss in terms of years of life. Reduction of DALYs and mortality are linked to adequate prehospital care and decreased transport times to definitive care. Given the financial and resource constraints in low-income countries, simple but systematic prehospital training programs for laypersons have been implemented in rural villages to stabilize patients. Most prehospital deaths are the result of airway compromise, respiratory failure or uncontrolled hemorrhage; all three of these conditions can be addressed by laypersons using basic first aid measures.

**Structure/Method/Design:** The hypothesis is that basic prehospital and primary hospital interventions made by layperson first responders and health care personnel will decrease trauma mortality and increase the number of capable first responders. In order to test this hypothesis, two communities of similar size, resources, and hospital capacities in Mozambique were selected. A trauma registry that included the patient's age, comorbidities, mechanism of injury, vitals on admission, interventions performed, and outcomes was established.

One community and hospital served as the intervention group that receives training on four basic resuscitative and stabilizing efforts in their native language. Community members received a 4-hour seminar that taught four basic resuscitative and stabilizing interventions prior to transport by ambulance or taxi/bus. These techniques include a modified ABCD (airway, breathing, circulation, disability) noted in developed nations. A is for airway opening that allows victims to receive oxygen by simply opening their mouths and removing any foreign objects if present. B is for bleeding and laypersons were taught how to apply compression or a tourniquet to control bleeding. C represents cervical spine immobilization with simple tools such as rice bags and newspapers. D is for disability which is reduced by transporting victims with a flat, immobile, safe method. Hospital personnel received the same ABCD training as the community with two additions—assessment that involves vital sign monitoring and IV fluid resuscitation as they are markers of shock and injury.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** Pre- and post-tests were administered to participants in their native language. Results of the study suggest community members can be trained in basic resuscitative techniques.

**Summary/Conclusion:** While laypersons and hospital personnel may receive and feel comfortable administering basic resuscitation techniques, further data must be collected to see if this intervention improves mortality. Analysis of the newly implemented trauma registry will evaluate mortality.

### Esophageal cancer in Northern Tanzania: Geographical distribution and case characteristics

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**Structure/Method/Design:** This was a descriptive retrospective study of histologically confirmed cases of esophageal cancer diagnosed at the Kilimanjaro Christian Medical Centre, and identified through its Cancer Registry and/or endoscopy unit, from 1998 to 2008. Demographic data (age, sex, village) were obtained from hospital records and a risk-factor questionnaire was administered to patient's relatives.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** 802 patients were diagnosed with esophageal cancer during the study period, the majority of which was squamous cell carcinoma. 59% of cases were male. Mean age at diagnosis was 60 years (inter-quartile range 50-70). The age-standardized incidence rates (ASR to world population per 100,000) were 6.8 and 3.8 in men and women respectively. Large geographical variations were observed. ASRs were over 9 in men in Moshi Urban, Moshi Rural, and Hai and less than 3 in Rombo, Mwanga and Same districts. 96% of male cases and 92% of female cases had drunk alcohol regularly; 38% and 5% had consumed strong illicit moonshine spirits (gongo). Amongst drinkers, drinking started at mean age of 13 years, with 25% having started by age 8 and mean lifetime years of drinking was 50 (SD 15.6). 87% of male and 36% of female cases had smoked tobacco regularly.

**Summary/Conclusion:** Within the high esophageal cancer area of the Kilimanjaro region, the south and western districts adjacent to the Kilimanjaro mountain peak have over 3-fold higher incidence rates than other districts in the region. Prevalence of alcohol and tobacco consumption is higher among cases than in previous population surveys. These findings need further investigation in a broader analytical study.

### Leveraging PEPFAR-funded HIV programming to enhance to delivery of NCD care in southern Botswana

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**Background:** Botswana's HIV prevalence is 19%, with antiretroviral drugs available to all eligible citizens. Through the President's Emergency Plan for AIDS Relief (PEPFAR), the Botswana-UPenn Partnership (BUP) has provided HIV support to rural hospitals across the country since 2006. Since the program's inception, BUP's outreach has extended support to outpatient care for non-communicable diseases (NCDs) to both HIV-infected and HIV-uninfected adults. Little data exists on how PEPFAR programming in Africa impacts on the care for NCDs. We sought to describe the burden of disease referred to HIV specialists on outreach to hospitals in southern Botswana.

**Structure/Method/Design:** We collected data on patients seen by HIV specialists on outreach to nine hospitals in southern Botswana. At each site, specialists saw outpatients referred by local general practitioners. Data collected from each encounter included HIV status and the reason for the encounter. Statistical analysis included descriptive analyses and  $\chi^2$  test for categorical variables.

**Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract):** Between March 2011 and February 2012, outreach physicians recorded 400 outpatient encounters. 56% (224/400) of encounters occurred at primary hospitals and 44% (176/400) at district general hospitals.

The majority (69%) of patients seen by specialists presented with two or more medical problems. The most frequent medical problems encountered included hypertension, (17.5%,  $n = 70$ ), diabetes mellitus (8%,  $n = 32$ ), and congestive cardiac failure (5%,  $n = 19$ ). Cardiovascular diseases accounted for 29% of all diagnoses, neurological diseases 15%, and endocrine diseases 12%. There was no difference in either the spectrum of disease or the complexity of medical problems seen at district versus primary hospitals.

27% of encounters were with patients with confirmed HIV infection, the remainder had either unknown HIV status (32%,  $n = 129$ ) or were HIV-uninfected (40.3%,  $n = 161$ ). Among individuals with confirmed HIV-infection, 41% ( $n = 41$ ) of consultations related to HIV management. The other most frequently encountered diagnoses among HIV-infected individuals included hypertension (10%), tuberculosis (7%), diabetes (5%), and meningitis (5%).

**Summary/Conclusion:** Over a 12-month period, physicians in BUP's outreach program saw a significant number of patients with NCDs at nine Botswana outreach facilities. Most patients were not HIV-infected and the most frequent conditions seen by physicians were hypertension, diabetes, and congestive cardiac failure.

This study is limited by referral bias. Nevertheless, the analysis demonstrates how PEPFAR funding ensured access to physician consultations for NCDs as well as HIV. The data also supports growing evidence that Botswana faces a double-burden of infectious and non-infectious diseases. Given this epidemiologic transition, leveraging PEPFAR funded HIV-programming to expand access to care for patients with NCDs is increasingly important. While long-term follow up is necessary to assess the impact of PEPFAR on NCD services in Botswana, there is also an urgent need to build NCD capacity across the country.

### Double-dipping: When your research answers unintended questions

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**Background:** Global health research invests tremendous human and material resources into resource-poor settings. The scientific model and the nature of IRB approval demand specific research hypotheses, measured and carefully applied methods, and protection of participants and their health information. However, frequently the study of specific diseases leads to the collection of information that may be relevant to other health problems. The investment to study disease in often marginalized or hard-to-reach populations is substantial, and the potential to use data collected, and resources created, for other purposes is an important consideration.

**Structure/Method/Design:** Our team has developed a community-based research project in 2003 in a large urban slum of 14,000 residents, called Pau da Lima, on the periphery of Salvador, the