

System (OHASIS) to gauge the intensity of GHEs through budget allocations. OHASIS engagements are tested against controls and variables from open-sourced databases to determine the effectiveness of GHEs on U.S. Partner Nations (PNs). The analysis is conducted in STATA and consists of two-staged least squares regression models controlling for selection effects. Regression models are computed for health (e.g., infant mortality, tuberculosis disability adjusted life-years [TB DALYs], maternal mortality) and policy (e.g., ideal point differences, fragility index) measures of effectiveness (MOEs).

Outcomes & Evaluation: The results indicate that OHASIS-funded health engagements have a statistically significant relationship with the selected health and policy MOEs. A 1% increase in OHASIS GHE funding is associated with a 0.6%, 0.3%, and 0.2% decrease in PNs' infant mortality, maternal mortality, and TB DALYs, respectively. Likewise, the results indicate that a 1% increase in OHASIS health funding results in a 0.005 unit decrease in PNs' disagreement with U.S. policy preferences and a 0.05 unit decrease in PNs' fragility index.

Going Forward: Overall, DoD GHEs have a strong statistical impact on policy MOEs, with an even greater impact on health MOEs. The findings indicate positive national-level policy effects, thereby encouraging further research on GHE's impact at the local level. Researche

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Abstract #: 01GMHE005

Lives saved accountability scorecard

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Background: With an eye toward encouraging further progress on reducing child mortality, the Office of the United Nations Secretary-General Special Envoy for Financing the Health Millennium Development Goals (MDGs) sought to construct a "lives saved" accountability scorecard. Such a scorecard would relate health expenditure for child health and the number of child lives saved. With this scorecard, partner organizations could gain information about how to optimize impact from their investments in child mortality reduction. While there is consensus around the need for this scorecard, it remains a complex measurement task.

Methods: Given the time lags in the measurement of child mortality in developing countries, we focus on estimates that can provide direction in the near future. To best influence advocacy and decision making, we look at the marginal cost per child life saved. We base our estimates off two principles: first, the reporting of disbursements and the estimation of lives at the country level provides the most intuitive and pragmatic numbers to aide decision making; second, within a country, every dollar contributes equally to years of life saved. With these principles as a foundation, we estimate the time series of government expenditure and development assistance on child health by country and by year. We use these estimates to calculate cumulative change in expenditure over two MDG time periods. Next we estimate child deaths both with and without controls for changes in GDP, maternal education, and HIV. We also look at the cumulative change in child deaths over the two time intervals. Finally, we look at the ratio of change in expenditure to change in child deaths, and from this we make an approximation of the marginal cost of saving an extra child life.

Findings: We have undertaken empirical analysis to assess the likely marginal cost per year of life saved at the regional level over two

MDG time periods: 2000-2006 and 2006-2011. We selected two separate time periods because higher expenditure and faster rates of child mortality occurred in the second half of the decade. Our preliminary analysis shows a marginal cost per child life saved of \$65,497 in all developing countries, with strong regional variation.

Interpretation: While the relationship between expenditure and health is vastly more complex than can be adequately conveyed through a scorecard, the simplicity of this metric and our approach is beneficial. We have created a common accountability mechanism that is easy to communicate and conceptualize for those facing resource allocation decisions. Our results provide a preliminary analysis which can serve as a framework for discussion and policy intervention among donors and governments.

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Ethical approval process considerations for research in resource limited settings globally

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Program/Project Purpose: In the context of global health, human subjects research in low- and middle-income countries (LMICs) has significantly increased over the past few decades among academic institutions based in higher income countries. While research holds tremendous potential to alleviate the burden of disease, conducting research in vulnerable participants must be carefully considered. Investigators from higher income countries are mandated to undergo review and approval by an Institutional Review Board (IRB) prior to initiating research, receiving federal funds or obtaining scientific journal acceptance. This regulation is often non-existent or partially enforced in many LMICs. **Structure/Method/Design:** Resources from the World Health Organization and Council of International Organizations of Medical Sciences provide guidelines for ethics but leave regulations to each autonomous nation, many without the resources to establish a formal system. There is high variability regarding ethical reviews between countries, which leaves room for interpretation and can lead to negative consequences. We describe a process while seeking approval in an international setting from our experience through an epidemiologic-genetic, case-control study in Democratic Republic of Congo (DRC), Honduras, Mexico, Morocco, Philippines and Vietnam. Various potential stakeholders of the ethical process are explored through five levels: (1) national, (2) institutional, (3) regional, (4) local and (5) individual.

Outcomes & Evaluation: A layout was constructed to facilitate identifying stakeholders in the broad and specific community in which research was being conducted: 1. National considerations: National laws on clinical trials, genetics, biotechnology, etc. Banned or highly regulated research procedures Import/export of research data or specimens Formal application or procedures for foreign investigators 2. Institutional considerations: Requirements at home institution IRB filing and approvals Enlisting in-country co-investigators University or hospital ethics committees 3. Regional considerations: Ministries of Health Provincial or regional government Differing regional regulations Additional health structures 4. Local

considerations: Independent ethics committees within hospitals or clinics Local leader or village chief permission or support 5. Individual considerations: Factors that limit true informed consent Appropriate consenting process Spousal permission In DRC, we obtained approval from the DRC National Order of Physicians Ethics Committee and at individual clinics. In the Philippines, the University of Santo Tomas partnered and undertook primary IRB responsibility with additional approvals at each hospitals. In Mexico, a hospital-based partnership was formed with Shriners Hospital Tijuana through a co-investigator. In Honduras, Morocco and Vietnam, approvals came from directors of individual hospitals and clinics.

Going Forward: A checklist tool is being developed to facilitate the international ethical approval process for similar studies conducting international human subjects research. The tool will assist in identifying stakeholders and understanding which approvals are needed

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Abstract #: 01GMHE007

Attracting and retaining nurses to a rural hard to reach post in lesotho: A combination of financial incentives, preservice competency based curriculum and student rural clinical placements

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Program/Project Purpose: Lesotho is one of the 57 countries that are experiencing health workforce crisis and distribution challenges. This program represents a combination of three US Government funded projects whose aim was to prepare nurses that would be attracted and retained in the rural mountainous areas of Lesotho. The three projects focussed on financial and no-financial incentives, development of a competence based curriculum for midwives willing to work in rural areas and student nurse rural clinical placements program. These programs were implemented by 3 US Government implementing partners; ECSA, Jhpiego and Columbia University. These programs are/ were concurrently implemented from 2010 to 2014/15/16.

Structure/Method/Design: To prepare a nursing cadre willing to be deployed and retained in rural hard to reach mountainous areas of Lesotho; To develop a competency based curriculum that prepares a nurse midwife to work in rural areas of Lesotho; and To attach student nurses to rural clinical sites in order to expose them to the rural work environment and therefore prepare them for rural posts. The nurse participants were nursing students in the six nursing schools and in-service nursing staff working for the Ministry of Health. The capacity building activities were carried out in both Ministry of Health and Churches Health Association of Lesotho training institutions and health facilities.

Outcomes & Evaluation: The results were collected through routine program monitoring information and a specific evaluation conducted on the students that were placed in rural clinical sites to assess their willingness to work in rural hard to reach health facilities once they graduate. The research results revealed that of the 49 students placed in rural clinics 35 (71%) stated willingness to work in rural sites after graduation. The program also monitored the recruitment of staff to the 46 rural hard to reach health facilities. The program was able to attract and fill 325 nurse positions out of the earmarked 375 positions (87%).

Going Forward: The program clearly shows that a combination approach to preparing nurses for rural deployment, beginning with the content of the curriculum, student placement in rural areas and a combination of financial and non-financial incentives does improve availability

Funding: The partners that supported the activities of this program include USAID using PEPFAR funds and Irish AID supporting the financial and non financial incentives at the 46 health facilities.

Abstract #: 01GMHE008

Time series analysis of sexual assault case characteristics and the 2007–2008 period of post-election violence in Kenya

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Background: Kenya witnessed hundreds of cases of sexualized violence in the post-election period (December 2007 to February 2008), yet few comprehensive medical studies measure the prevalence of sexualized violence cases. The aim of this study was to establish the patterns of mass rape during the post-election violence.

Methods: Medical records of 1,615 patients diagnosed with sexual assault between 2007 and 2011 at healthcare facilities in Eldoret (n = 569), Naivasha (n = 534), and Nakuru (n = 512) were retrospectively reviewed to examine characteristics of sexual assault cases over time. Data were cleaned to eliminate cases from the analytic dataset that failed logic and consistency checks. Time series and linear regression were used to examine temporal variation in case characteristics relative to the period of post-election violence in Kenya. We collapsed the dataset by month of assault and calculated the percentage of cases that exhibited a case characteristic of interest, then examined the first 10 autocorrelations for each outcome series, and calculated the Durbin-Watson statistics. Key informant interviews with healthcare workers at the sites were employed to triangulate findings, using inductive content analysis. This research was approved by the Institutional Research and Ethics Committee of Moi Teaching and Referral Hospital, the Boston University Medical Center Institutional Review Board (IRB), and the Research Triangle Institute International IRB.

Findings: Prais-Winsten estimates indicate that cases in the PEV period showed a greater percentage-point increase in a one-month lag between date of assault and date of presentation to healthcare facility (0.28 in PEV cases, 0.10 in non-PEV cases, $p = .003$), the perpetrator being unknown to the victim (0.45 in PEV cases, 0.23 in non-PEV cases, $p = .001$), more than one perpetrator being involved in the sexual assault (0.35 in PEV cases, 0.13 in non-PEV cases, $p = .001$), and abdominal injuries (0.07 in PEV cases, 0.03 in non-PEV cases, $p = .025$). Sensitivity analyses confirmed that these characteristics were specific to the post-election violence time period.

Interpretation: These results illustrate systematic alterations in sexual assault case characteristics during the PEV period in Kenya that are consistent with the patterns of mass rape in conflict settings elsewhere. This finding bolsters claims being advanced in legal processes that crimes against humanity of mass rape took place during post-election violence. Limitations of the study include the inability to capture cases that were not reported to medical facilities or sexual homicides, as well as variation over time and by location of medical records. A strength was that time series analysis in conjunction with medical record review allowed us to gain efficiencies that would be lost in a larger, cross-sectional population base survey relying on survivor recall.

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Informal fees for maternal health: A critical interpretive synthesis of evidence and policy

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