THE 2013 CENTER FOR GLOBAL HEALTH
STUDENT SCHOLAR SYMPOSIUM

Friday 1 November 2013
The Newcomb Hall Art Gallery at the University of Virginia
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2—5PM
The Newcomb Hall Art Gallery at the University of Virginia

2:00PM
Welcoming Reception and Opening Remarks
Rebecca Dillingham, MD, MPH, Director, University of Virginia Center for Global Health

2:30PM
Center for Global Health University Scholar Presentations representing the University of Virginia College of Arts & Sciences, the School of Nursing, the School of Engineering, the Frank Batten School for Leadership and Public Policy and the School of Medicine

Community Health in Limpopo: Design and Implementation of a Training Curriculum on Chronic Disease for Community Health Workers in the Vhembe District, Limpopo Province, South Africa
Ashley Keller, Christopher Winstead-Derlega, School of Medicine, 2nd Year
(presenting on behalf of the Community Health Team)

Rochelle Zarzar, School of Medicine, 4th Year
Laura Stamper, University of Virginia College at Wise, Biology, 4th Year
Katherine Stanley, Batten School for Leadership and Public Policy and Public Health Sciences, 2nd Year
Margaret Wightman and Christina Luckett, School of Nursing, Clinical Nurse Leader Masters candidates
2013 Pamela B. and Peter C. Kelly Award for Improving Health in Limpopo Center for Global Health Scholars

Barriers facing Tanzania in Achieving Universal Coverage: An Analysis of Governmental and Non-governmental Health Insurance Programs in the Kilimanjaro Region
John Burns, College of Arts and Sciences: Echols Scholar Interdisciplinary Major – Global Health Economics, 3rd Year
Richard and Nancy Guerrant – Center for Global Health Award

Global Health at Home in Charlottesville: An interdisciplinary Assessment of Health-associated Resources Available to the Latino community and Participant Perceptions of Resources: Guatemala /USA
Melissa Ogden and Steven Nguyen, School of Medicine, 2nd Year

The Resilience of the Prenatal and Maternal Health Systems of Bluefields, Nicaragua and South West Virginia
Corinne April Iolanda Conn, College of Arts and Sciences: Global Development Studies (GDS)—Public Health, 3rd Year (Echols Scholar)
Nour Alamiri, College of Arts and Sciences: Anthropology, 3rd Year
Sumra Ahmad, College of Arts and Sciences: Foreign Affairs, 3rd Year

Validation of a Tuberculous Meningitis Case Definition Through Use of GeneXpert Technology in Mbarara: Uganda
Emily E. Evans, School of Engineering and Applied Sciences; Biomedical Engineering, 4th Year
Pfizer Initiative in International Health-Center for Global Health Award
4:00PM  *The Center for Global Health Research Scholar Symposium Keynote*
*Women’s Justice Initiative: Improving Women’s Access to Justice in Rural Guatemala*
Kate Flatley, UVa Law School Graduate (2008) and Center for Global Health Scholar Alum, Founder and Executive Director of the Women’s Justice Initiative (WJI) in Patzun, Guatemala. WJI works to empower Guatemalan women to address inequality and gender violence. Kate leads WJI’s work in rural communities where women face extreme poverty, high rates of gender inequality, and have little or no access to social services.

**Co-sponsored by the Center for Global Health, School of Law Human Rights Program and the UVa Women’s Center Program on Women, Girls and Global Justice (WGGJ) and the UVa-Guatemala Initiative**

5:00PM  Thanks and Closing Remarks
WELCOME TO THE CENTER FOR GLOBAL HEALTH
2013 STUDENT SCHOLAR SYMPOSIUM

The University of Virginia’s Center for Global Health was established in 2001. We foster the commitment of students, faculty, and partners from many disciplines to address the diseases of poverty.

The Center has three components:

1) Scholar awards for UVa students who develop faculty-mentored projects related to health with collaborators in resource-limited settings
2) Fellowships for international researchers from collaborating institutions in developing regions to train and conduct research at UVa in order to return home, train others, and lead efforts to address local health priorities
3) Collaboration support for institutions, centers, faculty, fellows and students relating to global health to prepare for and inspire involvement in global health and development.

Thank you for joining us today, as we continue in our mission of building partnerships for global health.

Rebecca Dillingham, MD, MPH
Director, Center for Global Health
Director, Water and Health in Limpopo Project
Assistant Professor of Medicine and Public Health Sciences

Richard L. Guerrant, MD
Founding Director, UVa Center for Global Health
Thomas H. Hunter Professor of International Medicine
Director, Office of International Health
- Our Thanks -

The CGH symposium and scholar programs are made possible by institutional support from the University of Virginia, including President Teresa A. Sullivan, PhD; Executive Vice President and Provost John D. Simon, PhD; Dean, UVA School of Medicine, Nancy E. Dunlap, MD, PhD, MBA; Dean of the School of Nursing, Dorrie Fontaine, RN, PhD, FAAN; Dean, School of Engineering and Applied Science, James H. Aylor; Vice Provost for Global Affairs, Jeff Legro, PhD; The Glenn and Susan Brace Center for Global Health Scholarship Fund; The Pamela B. and Peter C. Kelly Award for Improving Health in Limpopo Province; The Class of 1985 Nancy Walton Pugh Scholarship Fund; The Ram Family / Center for Global Health Scholar Award; The Sister Bridget Haase, O.S.U. Center for Global Health Scholarship / Catherine and James MacPhail; The Joy Boissevain Scholar Award for Global Public Health and the following UVA organizations:

PFIZER INITIATIVE IN INTERNATIONAL HEALTH AT UVA
FRAMEWORK PROGRAM IN GLOBAL HEALTH, FIC/NIH
WATER AND HEALTH IN LIMPOPO PROJECT
INTERNATIONAL STUDIES OFFICE
MEDICAL ALUMNI ASSOCIATION
UVA – GUATEMALA INITIATIVE
HEALTHY APPALACHIA INSTITUTE
UVA GLOBAL SURGERY INITIATIVE IN RWANDA
THE UNIVERSITY OF VIRGINIA AND MBARARA UNIVERSITY OF SCIENCE AND TECHNOLOGY
GLOBAL HEALTH RESEARCH PROGRAM

PHOTOGRAPHS PROVIDED BY CGH SCHOLARS.
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OUR SINCERE THANKS FOR THE USE OF THESE IMAGES.
John Burns  
College of Arts and Science, Echols Scholar Interdisciplinary Major – Global Health Economics, 3rd Year 
The Richard and Nancy Guerrant / Center for Global Health Scholar Award 
Tanzania -- Barriers facing Tanzania in achieving universal coverage: an analysis of governmental and non-governmental health insurance programs in the Kilimanjaro Region

Generally speaking, health financing in the developing world is still heavily dependent on external donor agencies and out-of-pocket (OOP) health expenses. These OOP expenses carry the potential of crippling the future financial goals of the low-income population, a segment of the population that both most strongly needs programs to mitigate financial risk and that finds them most inaccessible. With population health increasingly becoming an assumed governmental responsibility, governments throughout the world are restructuring their health financing systems in order to comprehensively provide access of quality health care to the entire population.

The United Republic of Tanzania, ranked 152 on the Human Development Index, is currently seeking the most appropriate design for their health system in order to provide accessible care to its 45 million citizens, including the over 90% of citizens living and working within the informal sector. Currently, an
estimated 12–14% of the Tanzanian population is covered, though Tanzania has expressed goals of reaching 30% coverage by 2015.

In order to achieve their 2015 goal, the Tanzanian government has recognized that change is necessary within the existing structure of health insurance programs. Governmentally, the National Health Insurance Fund (NHIF) and Community Health Fund (CHF) networks operate in conjunction with a few social pension funds (NSSF, etc) to make up the majority of the 12–14% covered. Until 2009, the NHIF covered only governmental employees and some other formal sector, tax–paying workers (around 7% of the population) and did not reach very far down the spectrum of income brackets, leaving individuals within the informal sector to the district–managed CHF network. In 2009, however, the NHIF absorbed management of the CHF and has been working to grow the program, hoping it to eventually provide universal coverage.

In competition with governmental programs, however, organizations like MicroEnsure, with their Kilimanjaro Health Plan, have entered the health insurance market. Currently, the program only has 20,000 individuals enrolled, but is making strides towards proving a model for a financial sustainable health insurance program for low-income populations. The initial success of this program has even peaked the government’s interest in the region and MicroEnsure’s model could be used for governmental offerings throughout the Kilimanjaro Region.

Though the progress is noted, health insurance programs still remain voluntary and have experienced low levels of enrollment, due to a variety of issues. These can commonly be arranged in divisions of issues related to trust, education, or finances. Within these three overarching categories, working with the programs mentioned above, I dissected the hindrances and reluctances at the individual level, creating a comprehensive analysis with accompanying suggestions towards the construction of demand–side health insurance programs in Tanzania.

Amy Curtis
College of Arts and Sciences, History, 2013
USA (Washington, DC) · How the Built Environment and Social Landscape of a Gentrifying Neighborhood Affects the Mental Health of Residents

I graduated from the University of Virginia in May of 2013 with a BA in History and a minor in Urban and Environmental Planning. In the fall of my senior year, as most of peers applied for full-time employment, I applied for a Center for Global Health grant to spend the summer in a Washington, DC neighborhood to research how changes in the built environment affect the mental health of community members. I didn't feel quite ready to relinquish my student status; I had questions I wanted to explore before starting a career. I wanted to explore connections between urban design, social connectivity, mental health and community wellbeing. I was particularly interested to learn if improvements in the physical design of the neighborhood correlated with increased levels of individual wellbeing and decreased incidences of depression.

Whereas most Center for Global Health students travel thousands of miles to conduct research, I began my global health journey only a short Amtrak ride from Charlottesville. As an American history student and a keen observer of the built environment, Shaw was the ideal site for my research pursuits. The Northwest neighborhood had a rich African American history and was undergoing rapid physical changes. Every week luxury condominiums, libraries, parks, restaurants, transportation networks, and commercial stores are erected. These physical developments, in turn, change the demographics of the community.
The work presented in this report is based on qualitative research I gathered during ten weeks I spent in Washington, DC in the summer of 2013. My primary mode of data collection was in-depth semi-structured ethnographic interviews with residents of Shaw. In order to gain the perspective of a multiplicity of actors, I interviewed neighborhood newcomers, small business owners, longtime residents, Howard University students, library patrons, non-profit leaders, policymakers, construction workers and real-estate developers. In addition to scheduling interviews, I attended community events, actively read community blogs, read historical neighborhood archives and interned at One DC, a prominent Community Development Organization located in Shaw. By conducting in-depth interviews with a range of actors I was able to better understand how residents perceived and interpreted the changes experienced in Shaw.

At the onset of my study my research questions were broad in scope. Did residents positively perceive physical changes, utilize new amenities, and feel a decreased or increased sense of belonging in the new Shaw? How did the changing physical and social landscape of the gentrifying neighborhood affect the mental health of residents, particularly the incidence of anxiety, loneliness and depression?

I showcased my findings in multiple mediums (available via globalhealth.virginia.edu): The Google maps depicts the spatial layout of the neighborhood and provides context for the interviews I conducted. The Prezi is a visual display of how the built environment affected mental health in Shaw, and the PowerPoint reinforces the Prezi by highlighting quotations from interviews I conducted in the field.

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Corinne April Iolanda Conn  
College of Arts and Sciences: 2nd Year (Echols Scholar)  
Nour Alamiri  
College of Arts and Sciences: Intended Major: Global Development Studies (GDS)–Public Health, 2ndYear  
Sumra Ahmad  
College of Arts and Sciences: 2nd Year  
USA and Nicaragua - Resilience of Prenatal and Maternal Health Systems: Case study in Bluefields, Nicaragua and Southwest Virginia

Our purpose was to observe and compare the resilience of the prenatal and maternal health care systems in Bluefields, Nicaragua, a main Caribbean port city, and Southwest Virginia (Districts 1 and 2). We questioned if a resource-rich, highly biomedical, and technologically dependent maternal health care system is comparable to one that is resource-poor and less technologically dependent, when both systems undergo similar disruptions. We hypothesized that the systems would differ in their capabilities to adapt to and function in catastrophic environments.

Our project focused on the maternal and prenatal health systems of both locations. We interviewed health care professionals at different levels of the system using qualitative methods. The questions used helped illuminate how each system functions under typical and atypical circumstances, with respect to different categories such as psychosocial issues, transportation, communication, telecommunication, power outages/natural disasters, and education for nurses and midwives.

The healthcare professionals in each system felt that their own emergency protocols were appropriate for their respective circumstances. However, we observed more flexibility in Bluefields than Southwest Virginia in adapting protocol in times of stress. Both areas struggled with transportation issues, like transporting patients to health care facilities. A main obstacle in both locations was the distance that patients and
healthcare professionals had to travel to reach each other. Cellphone coverage did not prove to be dependable in rural areas of Southwest Virginia, causing difficulty in connecting with patients.

When asked about what type of disaster each system feared the most, it was interesting that SWVA feared any disaster that caused their computer systems to malfunction, while Bluefields feared a major hurricane that would fell buildings or block roads.

In both locations, the health professionals expressed positive attitudes toward their system’s ability to be resilient and adapt under any circumstances. Overall, neither system seemed to be superior in its ability to adapt to and function in catastrophic environments in its respective region and population. Our findings illuminated certain problems, strengths, and weaknesses that future research and funding should address in each location. The prenatal and maternal health system in Bluefields provides substantial medical, financial, and psychosocial support to patients, but health professionals expressed the need for better funding for medical supplies, transportation vehicles, and communication technology. Similarly, health professionals in Southwest Virginia expressed a deficiency in high-risk obstetricians and poor transportation systems, but have strong telecommunication structures, medical technology, and accessible health education. Fundamentally, the confidence that the health professionals in each location had for their system was evidence of resilience. Based on the similarity of each location’s issues, there might be benefits in exchanging ideas and observing and learning from one another.

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Caitlin Eberhardt
School of Law, 2nd Year
Glenn and Susan Brace Center for Global Health Scholar Award
In conjunction with the UVa School of Law Human Rights Program and the Women’s Justice Initiative in Patzun, Guatemala
Guatemala · Women’s Rights Education Program (WREP): Training and Outreach on the Right to Health, Sexual and Reproductive Rights, and Maternal Health Protections

In Summer 2013, I worked with the Women’s Justice Initiative, an organization that Kate Flatley, UVa Law alumna ‘08, founded after she graduated. I was also incredibly grateful to have received funding for this important work from the Center for Global Health at UVa.

The Women’s Justice Initiative works with indigenous Maya women living in these rural communities. WJI empowers indigenous women to address gender inequality and enhance their quality of life by providing them with access to legal counsel and educational resources. WJI envisions a Guatemala in which women are active leaders in their communities, have access to legal services that are culturally appropriate, have knowledge of their legal rights and can safely assert these rights, and are free from gender-based violence.

A few things became apparent after living in rural Guatemala for a few weeks. The machismo culture is largely prevalent in this country, especially in rural communities. Guatemala is a highly patriarchal society and gender inequality is firmly entrenched in its culture. Women’s subordinate position is evidenced by key social indicators including life expectancy, malnutrition, education and literacy. Women and girls rank significantly lower than their male counterparts in these areas. Many women face pressures to adhere to traditional gender roles such as having children, taking care of the house, and making tortillas. Women are often denied access to educational and employment opportunities outside the home, and some women in more remote areas are never taught to read, write, and do not speak Spanish. Domestic violence is also rampant in Guatemala with some studies finding that more than 50% of women in Guatemala are victims of domestic abuse at some point in their lives.

WJI works to realize this vision first by training local women to be program leaders in their communities. Then, these trained leaders hold a series of workshops for women in their communities covering different personal, legal, and health rights. This approach is especially effective because the movement for change comes from within the community and is not imposed from the outside. Further, because the local leaders
can tailor the programs to fit the individual needs of their own villages, this model is especially responsive to different communities’ situations.

During my time here in Guatemala, I have been observing how WJL’s programming is taking shape in the different towns. I have also been helping to develop some of the trainings that the local leaders will complete before holding their own workshops. Guatemala is ranked among the worst countries in the world in terms of gender equality, and the movement for women’s empowerment there is still young and in need of support and development. Yet, one of the more surprising realizations I had this summer was that even in the United States, where we have been fighting for gender equality for an entire century, the equal status of women is still not totally secured. Like the government of Guatemala, the United States government has recognized in its laws that women and men are equal and should have equal rights. However, in America commonly held ideas about the roles men and women should play in the home and in public, which health services should be available to women, and even views on standards of beauty oftentimes remain biased in favor of male decision makers. Stepping out of my own culture and observing another has given me some perspective on women’s rights in my own country. While the state of women’s rights in Guatemala is far more dire than in the United States, I am grateful for the insight this experience gave me into the lives of women in both countries. I believe that while I have shared knowledge and experience with the women of Guatemala, they in turn have taught me so much by sharing their own experiences with me.

The most important lesson I’ve learned from my work is that it is essential that a movement for rights come from within a community, because only then is the movement a genuine and accurate reflection of the true needs of the people. Furthermore, I’ve learned that even when people have legal rights on paper, this is altogether very different from having those rights in practice. Whether it be in Guatemala or in the United States, people must be constantly vigilant not only in claiming their rights, but also in protecting the ability to exercise them in their daily lives.

Mary Winston
School of Nursing, Doctoral candidate, DNP Program
USA - The Short Term Medical Mission: An Effective Method for Addressing Global Health Needs?: Atlanta, GA, USA

As a nurse practitioner I have worked with diverse vulnerable populations in a variety of geographic settings in the USA and beyond. Here at UVA I have had the opportunity to study global health care delivery, an interest that has been cultivated over my career working in an increasingly globalized society. This focus has allowed reflection on past activities and hence generated questions concerning current global health practice models.

One popular venue for global heath delivery is the short term medical mission (STMM), accessible to many providers because of the short term time commitment. These are medical trips generally lasting 1–12 weeks where health care is provided to vulnerable populations in resource poor settings. The STMM provides opportunities for health care providers and students to travel and share knowledge, skills, medical treatments and health education with needy communities. In doing so, participants can learn much about global health inequalities and can begin to develop strategies for removing barriers to health stemming from poverty and poor health care infrastructure. Though intent is commendable, STMMs have been criticized due to lack of sustainability, clinical and cultural competencies, accountability to communities served, and regular outcomes evaluations. A review of the literature confirmed that, given the numerous opportunities for participation in STMMs, there are few reports of how these programs address these criticisms.

The purpose of my project was to describe how the Farmworker Family Health Program (FWFHP) addresses challenges to providing sustainable, clinical and culturally competent and accountable care during an annual 2 week service trip. The FWFHP is a nurse led, mobile migrant health clinic providing health care to Hispanic migrant farmworkers. Though the FWFHP takes place in a remote rural area in the southeastern USA, many similarities to international STMMs are shared. For example, FWFHP providers/volunteers are
temporarily immersed into a setting where resources are limited; the population is medically underserved, from a different culture and has little English language proficiency. Since the FWFHP targets diabetes, a condition disproportionately affecting Latinos, outcomes related to diabetes care were also examined. A mixed methods case study design was employed using four data sources: personal observations, database and medical records review, and an interview.

Results: In the 2012 program the adult population (n=447) was largely Latino (99.6%, 445/447); Mexican (97.5%, 436/447); male (94.2%, 421/447) and young (mean age: 31.3 years). Sixty-four percent (288/447) was found to have risk for DM. Seventy-six percent (219/288) of those with risk received risk reduction education. Seventy-seven (77/288, 26.7%) individuals with risk received referral for follow up at the collaborating Migrant Health Center; 19.5% (15/77) of those sought follow up after being seen at the FWFHP. Though only eight patients had blood glucose levels checked at follow up, measures were significantly lower at compared to initial levels at the FWFHP clinics (p=0.008). There were no significant statistical differences in comparisons of initial and follow up blood pressure, weight or BMI, though a was downward trend in BMI was seen over time. The majority of follow up visits (60%, 9/15) occurred via outreach services. The FWFHP was found to have multiple structures in place which promote clinical and cultural competencies, sustainability and accountability resulting in both quantifiable and perceived benefits in the community served. The FWFHP effectively targets DM and provides risk reduction information which has been previously proven to increase adoption of healthy behaviors. The small number of follow-up visits limits conclusions concerning diabetes outcomes. Follow-up rates likely reflect persistent barriers to health care access and substantiate the importance outreach services in farmworker health.

This research was important for identifying key characteristics of sustainable organizations which in turn promote program longevity, for providing a description how multifactorial components of cultural competency can be incorporated into care delivery, and for describing how domains of accountability such as community benefit, fiscal responsibility, and access to follow up can be addressed. The overall conclusion is the FWFHP model for health care delivery can be adapted by similar organizations providing humanitarian health care to underserved populations in a variety of short term settings.

Though this project was essentially a research endeavor, a program evaluation meant to add to the body of knowledge concerning the role of STMMs in global health delivery, it was also very much an educational endeavor, part of my journey to DNP. I am very grateful for the CGH for encouraging both this project and my development as a scholar. I continue to reflect upon what was learned by “being there”: teaching given to me by the farmworkers, the staff at the local collaborating migrant health center, and the FWFHP leaders and participants. These gifts greatly enriched my educational experience and will provide a basis for giving back in the form of a more informed practice.
GUATEMALA
PROJECTS IN COLLABORATION WITH THE UVA – GUATEMALA INITIATIVE

Melissa Ogden
School of Medicine, 2ND Year
Guatemala - Global Health at Home in Charlottesville: An interdisciplinary Assessment of Health-associated Resources Available to the Latino community and Participant Perceptions of Resources

My Center for Global Health Scholarship experience began long before I boarded the flight to Guatemala. In the fall, I began discussing a trip to Guatemala with one of my colleagues, Steven. He and I shared an interest in preventive medicine and learning Spanish to better our future patients. While trying to settle on a research topic, we learned a great deal about the growing Latino population in Virginia and Charlottesville. Eventually, we settled on a project goal: to investigate the health resources available to, and used by, the Latinos living in Charlottesville.

In the spring, Steven and I worked to develop our project more thoroughly. We divided the work into two distinct sections: a survey of health providers and a survey of Latino residents. I took charge of the community resident survey. To develop the survey, I focused my research on learning about Latino health surveys nationwide and the history of the Latino community in Charlottesville. The survey was, in part, derived from the National Alliance for Hispanic Health. However, it also included novel questions about the University of Virginia and other health resources in Charlottesville.

With the surveys written, I took off for Quetzaltenango, Guatemala. I spent four weeks living with a Guatemalan family, studying Spanish, and soaking in the culture and history. I worked on translating my survey into Spanish and finalizing my protocol for IRB submission. With Dr. Burt’s help, Steven and I hired Spanish-speaking undergraduates. Back in the US, we trained our fieldworkers and began collecting surveys at local Latino markets and churches. My summer goal was 30 surveys, and we made it to 31!

I am currently in the process of data entry, so I don’t have any formal results. However, Steven and I have begun to discuss our observations from our summer research. While talking to Charlottesville service providers, Steven noticed a lack of communication or common mission. While plenty of free or low cost services exist for Spanish-speaking patients, there is not an effective referral system in place to help Latino patients navigate the health care system. During my interviews with Latino residents, I was struck by how infrequently this population actually uses health resources. The vast majority had never visited the UVA health system, and almost no one had health insurance. Barring further analysis, it seems that the largest obstacles to accessing healthcare may be immigration and insurance status.

Looking forward, we still have plenty of work to do. I would like to finish the data entry, and begin to compare trends with Steven. We would like to see exactly where the gaps in healthcare lie. Do resources already exist to address the problems raised by residents? Or would an entirely new program better address the needs of this population? Following analysis, we will work with Dr. Burt to help connect Latinos with the health services they need.

Steven Nguyen
School of Medicine, 2ND Year
Guatemala - Global Health at Home in Charlottesville: An interdisciplinary Assessment of Health-associated Resources Available to the Latino community and Participant Perceptions of Resources

The summer CGH scholarship experience was engaging, challenging, and varied. I learned a great deal about Guatemalan culture and the Spanish language while on my travels, and I was able to apply this knowledge and background to our global, Latino community in Charlottesville, Virginia. My partner, Melissa
Ogden, and I had a different structure to our CGH scholarship project. We went to Guatemala to learn Spanish while immersing in Guatemalan culture so that we could better execute a health needs assessment of our Latino community members in Charlottesville.

The time spent in Guatemala was amazing. My Spanish improved greatly with Spanish school. Living with a host family allowed me to practice Spanish while learning about my family and the customs of Guatemalan people. During this month, we continued planning our project so that when we got back, we could start executing our project right away. We also had a chance to travel and explore. One moment stands out during the first month of our scholarship experience. During my last week in Guatemala, I spent the evening along with two other students, my host siblings, and host mom making friendship bracelets. We were talking, being silly, laughing, and dancing to music; this moment reflected the bond and connection that we made during the month together, something that I will keep and treasure.

Once we arrived in Charlottesville, we started right away. Our project focused on two aspects. We developed a survey to interview community members about their experience with health care in Charlottesville. We asked about barriers to care and general health questions (common diseases, illnesses people perceived to be prevalent within their community). The other half of our project focused on services providers. We interviewed several services providers to see what services were provided for our Latino community and what their thoughts were on the needs of the community. Our goal was to gain an understanding of the perceived health issues and health services provided. We had planned the first week so that we could meet with our mentors, our team members, and finalize our research instruments. The first few service provider interviews were complete. In the next three weeks, we scheduled and conducted the rest of the interviews. I focused on the service provider interviews and was able to interview 14 organizations out of the 35 we had identified. Thorough analysis has not yet been completed, but there were many trends that have been identified. In general, there seems to be many services provided for our community, but not all of them are Spanish-speaking user-friendly. For instance, only half of the service providers have bilingual receptionist and they are not always available. Half of the service providers do not have a bilingual receptionist or phone answering service. These two seemingly simple issues present as real barriers when Spanish-speakers first approach organizations to access services. When asked about general barriers to services that may arise, many organizations cited transportation, documentation status, and language as major concerns for the community. Many cited mental health and dental care as being major health issues that our Latino community faces.

Melissa focused on the community member survey. We have not yet done a thorough analysis comparing our results, but we plan on completing more thorough analysis in the coming months. We both will continue our surveys during the fall and have established ties with our undergraduate team so that they may continue this project. I hope to complete 20 more service provider interviews. Through the CGH scholarship summer experience afforded me the opportunity to new language, leadership, teamwork, and communication skills while forming deep connections with the global, culturally diverse community in Guatemala and Charlottesville.

Olivia Quach and Esther Won
School of Medicine, 2nd Year
Guatemala - Socio-cultural assessments of lifestyles changes leading to epidemiological transition in Santiago Atitlán

As with many countries in Latin America, over the past few decades, Guatemala has been experiencing rapid globalization, demographic changes, and a massive rural-to-urban migration. Due to the lifestyle changes stemming from this transitional period, non-communicable diseases (NCD’s) including cardiovascular disease (CVD), cancer, mental health disorders and injuries, have become the foremost causes of mortality in this area compared to communicable diseases (CD’s) that previously were at the forefront of disease burden. This phenomenon has been called the Epidemiological Transition. Guatemala remains a developing nation, with 56% of families reportedly living below the poverty line, and morbidity and mortality from CD’s also remain a pressing concern. Consequently, this rise in prevalence of NCD’s, in addition to pre-existing endemic CD’s, has triggered a “dual burden of disease” for Guatemala. Specifically,
CVD is one of the leading causes of mortality in this region. These conditions have in common an array of behaviors that are conducive to the increase in the prevalence of risk factors and diseases. To our knowledge, there is no prior experience examining the prevalence and causes of these increasing Western behaviors in a community of predominantly Mayan descent.

For our study, we aimed to develop an assessment of knowledge, attitudes, and behaviors conducive to NCD’s and their risk factors, and an analysis of the community’s marketing strategies that are influencing these behaviors. Our project is part of an ongoing longitudinal study on CVD and women’s health in Lake Atitlán, Guatemala. We anticipate that the information gathered by our surveys will help design the content of an educational program that can be put into effect by our local community partners.

Our project was a two-part project, at the household level and at the market level, as we hoped to develop sound surveys to 1) assess the knowledge, attitudes and beliefs, and lifestyles of members of Santiago Atitlán related to the increase in NCD risk; and 2) determine the predominant changes in the community that are influencing this change in behaviors conducive to NCD’s. In order to address the first part of our project, we formed a household survey to examine the social and cultural behaviors that are currently in transition at the household level and piloted this survey to community health workers in Santiago Atitlán. This survey focused directly on current attitudes and beliefs towards actions that lead to an increase in NCD risk. In the second part of our project, we aimed to determine the penetration of food products and lifestyles that is inducing these behaviors conducive to NCD’s at the level of the market. Specifically, we surveyed local markets to assess the increased availability of Westernized processed foods and the marketing strategies that affect the diets of the people in the area, as well as to analyze the cost and accessibility of nutritionally healthy and unhealthy foods in Santiago Atitlán.

Our experience in Guatemala was an amazing opportunity to gain critical information about the community’s specific needs and concerns. Our work with local community health workers allowed us to speak directly to the people of the community on this crucial topic of NCD’s. Additionally, our individual interactions with the people of Guatemala through Spanish school, our host families, and even our weekend excursions gave us a deeper understanding of the culture as a whole. We are excited to use the information we gathered to help design an educational program that is relevant to the people we are trying to serve.

Robert Schenck  
School of Medicine, 2nd Year

Vivian Chan  
College of Arts and Science, 4th Year (Economics and Psychology)

Glenn and Susan Brace Center for Global Health Scholar Award

Guatemala - Carbon Credit Financing of Collaborative Community Water Education and Filter Initiative

Our project was an off-shoot of a prior successful UVa-Guatemala Initiative (UVa-GI) project, which initiated a model of health education, community collaboration, point of source biosand filters, and in-country follow up successfully in San Martin, Guatemala. In essence, the program consists of a weekly one-hour health education class for five months. At the conclusion of the class, the participants who have completed the course receive a Hydraid Biosand water filter. The program aims to decrease waterborne illness, improve child development, and empower families to maintain their own health.

Our project aimed to evaluate a potential solution to the water filter project’s major hurdle, funding. The water filters not only provide clean water and health to community members, but also have significant environmental positive externalities. The water filters decrease carbon output and deforestation because it is no longer necessary for members of the community to cut down trees for firewood in order to boil and sanitize their drinking water. The United Nations Framework Convention on Climate Change (UNFCCC) has guidelines in place to receive “carbon credits” for every ton of CO2 emission that is eliminated. Subsequently, if the decrease in carbon output due to the water filters can be quantified and verified it could be sold as a “carbon credit.”
At the time of our study, 22 families had finished the classes and had water filters installed in their homes. Another 28 families had finished the education portion of the program and were scheduled to receive filters the following week. This study consisted of 30 out of the 110 families in the community of San Martin. In each family, the female head of the household was surveyed. The 30 families consisted of ten families from three different groups: those who had already obtained a water filter, those who had completed the educational classes but had not yet received a filter, and those who had no affiliation with the water filter program.

We did find a difference between the families with and without filters in terms of energy usage. Families with filters averaged 170 lbs of wood burned per week, consuming 11.3 liters of water, 0.8 of which were boiled. Families without filters burned an average 230 lbs of wood per week, consuming 10.3 liters of water, 7.1 of which were boiled.

Our project aimed to be a pilot study, to see if partial or whole carbon credit funding was feasible in our community. Based off boiled drinking water consumption, the filters save a mere 0.4 tons of carbon per year. Consequently, at this point, it does not appear that the cost of monitoring, evaluating, and submitting for carbon credits would be worth the cost. The project would need to be on a larger scale to offset the overhead costs of the carbon credit accreditation process.

Nevertheless, two interesting things in our data did come up. Nearly every family who did not have a filter used boiled water to clean their food, brush their teeth, or other activities of daily living because the water is so pathogenic. The families with filters were using filtered water for all of these activities. Based off wood consumption instead of boiled drinking water in the two groups, the filters actually saved nearly two tons of carbon per year. Unfortunately, carbon credits are only awarded for drinking water. Also of note, an ongoing water filter project in Africa named Viability Africa, which is using carbon credits for funding, reports 7.5 L per person per day based off a literature review. Environmental differences may play a large role in the differences in water consumption. Still, it is interesting to note that our families on average drank less than two liters per day.
gave our interviewees the opportunity to expand upon challenges, successes, and desired future outcomes. Most of the interviews were incredibly conversational, and we were able to learn a lot through these interactions. These surveys were conducted over the course of three weeks, and we interviewed eighteen different sources.

One of the most rewarding and humbling facets of our project was the training we received to become more culturally cognizant. We realized the value of breaking through cultural barriers through our countless hours of language training in Spanish and the amount of time we spent with our families in our host stays – it eventually resulted in our ability to communicate and form relationships with the people we worked with, and especially to build trust. This was an integral component of our project and we understood the importance of being sensitive to a foreign culture and getting accustomed to their way of life. It enabled us to sympathize with those we worked with and with those we intended to help in the future.

Simply by conversing with various organizations, we were able to glean a tremendous amount of information that gave us a broad picture of the barriers and hurdles regarding education and cervical cancer in Guatemala. Through educational reform about cervical cancer, Pap smears, and the importance of preventative care and other factors, we hope to dispel any myths about preventative care, remove any stigma, and make education more accessible to women so that one day, we could see rates of cervical cancer fall in Guatemala. While we are aware that this is a huge undertaking, we are optimistic that this first tiny step will go a long way, and that we can train future generations on this project so that subsequent progress can be made.
RWANDA
PROJECTS IN COLLABORATION WITH THE UVa GLOBAL SURGERY INITIATIVE IN RWANDA

Mary Lansden Brewbaker
College of Arts and Sciences: Economics and Religious Studies, 4th Year
Rwanda - Healthcare Spending Prioritization

This summer, I, along with my research partner, a third year at UNC Chapel Hill, spent 9 weeks in Kigali and Butare, Rwanda interviewing general surgeons at public referral hospitals. The goal of our research was to answer the question “Which surgical supplies are most needed in Rwandan referral hospitals and how should we prioritize them?”

Rwanda is a landlocked country in East Africa with a population of about 11 million. The capital, Kigali, is the location of 2 of the 3 public referral hospitals in the country and has a population of about 1 million. The UVa Medical School’s Rwanda Collaborative works in conjunction with the Clinton Healthcare Access Initiative and other American universities to provide physicians, medical care and medical supplies to Rwanda in order to supplement their health system and to aid in the training of Rwandan medical students. Although many monetary resources and human capital have been provided by this program, little thought has been given to the procurement of medical supplies necessary for the training of these individuals.

In the Spring of 2013, in collaboration with UVa surgeon Dr. J. Forrest Calland, my research partner and I designed a survey to conduct among all practicing surgeons (n = 50) in Rwanda with the goal of creating a prioritization system for Rwandan surgical supplies to be used by hospital procurement officials and administrators. However, once we began to speak with Rwandan and surgeons and hospital administrators at Centre Hospitalie Universtaire de Kigali (CHUK), we discovered that the range and type of surgical supplies needed were numerous and that the opinions of the doctors varied greatly. Thus, we decided to narrow our survey to only practicing general surgeons at public referral hospitals and to focus on consumable supplies (such as gloves, sutures, gauzes, etc) only.

We proceeded to redesign our survey and to interview 12 of the 13 general surgeons at public referral hospitals in Rwanda. There are at total of 15 general surgeons in the country, 2 of whom practice at a private hospital and who were unavailable for an interview.

The survey results consisted of a range of very diverse opinions, with no clear winner as to which supply is most needed or most impactful. The results did, however, create a list of supplies that are clearly needed and gave insight into some of the problems within the current Rwandan procurement system, including the lack of influence of the physicians and nurses on which supplies are ordered and provided to each hospital. Another issue brought to light by this survey was the difference of opinion as to what constitutes a “need” by the ex-patriot surgeons as opposed to the native Rwandan surgeons.

Valentina Grajales
School of Medicine, 2nd Year
Rwanda - Intimate Partner Violence: Opinions of Physicians and Medical Students in Rwanda Regarding Social Norms, Screening, and Treatment

Intimate partner violence (IPV) is a worldwide public health concern and a leading cause of death and disability. The spectrum of intimate partner violence includes any form of physical or psychological violence directed towards an intimate partner. Some of the consequences of IPV include acute trauma, central
nervous system and somatic complaints such as GI and skin disorders. The 2010 Rwanda Demographic and Health Survey (DHS) demonstrated that 41% of women >15 years of age have experienced physical violence. In the United States, IPV measured in women since the age of twelve was estimated at 0.36% and IPV related medical costs were estimated at $4.1 billion per year. Most of the women experiencing IPV first procure medical treatment, which puts hospitals and clinics as a first point contact in many of these cases. We conducted a survey of healthcare providers with different level of clinical experience in Rwanda to assess their attitudes and perceptions towards IPV. This study aims to analyze the responses of physicians and medical students regarding social norms, screening, treatment and perceptions of IPV.

Methods: The survey was designed with 7 sections and a total of 87 questions that examined respondent demographics, healthcare attitudes, practices, perceptions and outcomes related to hospital and clinic encounters that potentially occur after intimate partner violence (IPV). Two hundred and thirty eight healthcare providers from 6 hospitals in Rwanda were sampled including 63 physicians from different specialties and 23 senior medical students.

Survey responses were recorded in Microsoft Excel and analyzed in IBM SPSS using one-way ANOVA tests for continuous data and Pearson's Chi-Square for categorical data. Statistical significance for this study was determined at the P<.05 level of significance. Ethical approval was granted by the University of Virginia Institutional Review Board with the IRB-SBS Protocol Number: 2012017800

Conclusions: Despite differing levels of education, years of clinical experience and field of medicine between doctors and students, similar attitudes and perceptions were seen in reasons for not asking about IPV in a clinical setting. Medical students were more likely to put the blame on the victim for experiencing IPV and suspect less from somatic and psychophysiological complaints as derived from IPV. Rwandan Physicians and medical students estimated the prevalence of IPV to be low in their patients, possibly even less than the frequency estimates found in the Rwandan DHS survey. Education regarding detection of IPV and management of IPV-related health problems is needed as the majority of both physicians and students reported a lack of training and hospital policies.

Dahea Kim
School of Medicine, 2nd Year
Rwanda - Postoperative Pain Control in Teaching Hospitals in Rwanda

I had a wonderful opportunity to help conduct a research at the Centre Hospitalier Universitaire de Kigali (CHUK) in Kigali, Rwanda this summer. I worked with Dr. Adolph Masu, a fourth-year anesthesiology resident at CHUK, to study the post-operative pain management in the adult population in CHUK. As administering adequate pain relief is important for both patient comfort as well as for the physiological healing process post-surgery, we felt that it would be beneficial to study how pain was managed in Rwanda and to see whether there was a need for an improvement.

We followed the patients up to 72 hours post-surgery and recorded their pain medications and the pain scores given in Visual Analog Scale (VAS) by the nurses. At the end of the 72 hour mark, we gave questionnaires to the nurses in charge as well as the patients to ask various questions about their perceptions of pain and pain management. We wanted to find out their cultural and personal perceptions of pain to see if that would affect the way the nurses handled pain management or the way the patients communicated their need for pain relief to the nurses. We also asked whether the nurses felt satisfied with their level of training on pain management and whether the patients were satisfied with the care that they received.

I was able to help collect data on a little over 80 patients while I was there. Unfortunately, we learned after I came back to US that there was a miscommunication between the on-site team in Rwanda and the off-site team in Canada. One of the main goals of the research was to find out the level of the patients’ post-operative pain, which is typically done using the VAS scores. We thought that we were supposed to record whether the nurses had checked the patients’ pain level with the VAS score when in fact the supervising off-site team in Canada had planned for us to perform the VAS on the patients ourselves to see whether the
pain medications given to the patients by the nurses were adequate and appropriate. However, we were still able to gather very valuable information through the questionnaires that were given to the nurses and the patients and they can help us better understand the perceptions on pain management in Rwanda.

This was my first experience in clinical research and I definitely learned a lot, especially through the mistakes that were made in the process. I learned the importance of communication with the participants of the research as well as with the fellow researchers. Many times the difficulties in communication arose from the actual language barrier itself, but I learned that that can be overcome with effort and willingness on my part. I was able to find ways to express myself more clearly by taking the time to explain the purpose behind the research even if it meant I had to do that with every nurse I came across. Patients often spoke no English whatsoever but I was able to find kind nurses and doctors who would help translate if Dr. Masu wasn’t available. I also learned that research is a team effort and that it takes a lot of work and time to keep it on track. But I, as well as everyone else involved in this research, believed that this would help the future patients in Rwanda and that helped motivate me to work harder.

I’m so grateful for this opportunity I had to help conduct such a meaningful research especially in Rwanda. This experience has helped me to grow as a researcher as well as a future physician. I was able to see so many great examples of kind, caring, and dedicated healthcare providers and that there was a great need for them in Rwanda as well as in many other countries in the world. I hope that I can help fulfill those needs in the future in whatever capacity that I can as I continue to grow and learn through these valuable experiences.

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Dibya Subedi (1), Achilles Manirakiza (2), Patrick Kyamanywa (3), Casey Eggleston (4), Yi Wang (5), Robin Petroze, MD (6), Thomas M. Guterbock, PhD (7), J. Forrest Calland, MD (8)
Rwanda - Evaluating the Surgical Need of Women in Developing Countries at the Community Level

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Background: The burden of surgical conditions in low-income countries has not been extensively studied to date. The Surgeons OverSeas Assessment of Surgical Need (SOSAS) survey tool provides a method to assess the prevalence and distribution of surgical conditions at the population level. The results have previously been analyzed at the country level in Rwanda but the specific needs of women have not been evaluated. We focus on the needs of adult women (18+ years) here in hopes of promoting proper resource and budgetary allocation that reflect the particular needs of the population.

Methods: The SOSAS tool was used to conduct a countrywide cross-sectional cluster-based survey in October 2011, which included all 30 districts and 5 provinces in Rwanda. The survey was conducted as a verbal questionnaire, and surgical conditions including wounds, masses, burns, and deformities, across 6 anatomical regions were reported. Responses are analyzed using descriptive statistics and univariate analysis.

Results: A total of 3175 individuals were surveyed (response rate of 99%). 1020 (32.1%) of the respondents were women aged 18+. 53.3% reported at least one surgical condition in need of evaluation in their lifetime, with 6.6% reporting a current need. Women had not sought care for 53.9% of current surgical
conditions that they believed needed consultation, leaving an estimated 105,434 surgical conditions in need of evaluation in the community at the time of the survey. The major reasons reported for not seeking care across all time frames were the lack of skilled doctors and nurses (52.2%) followed by a lack of money for healthcare (26.4%). Surgical Diseases have also caused a significant level of disability in Rwandese women with 30.4% of lifetime cases leaving women unable to work like they used to, and another 5.2% of cases leaving women in need of assistance with daily living.

Conclusions: Limited healthcare resources appear to exert a substantial influence on the health status of Rwandese women. Delineating the prevalence of surgical conditions and their associated disability will allow for more informed decisions regarding future healthcare spending.
Keanan McGonigle  
College of Arts and Sciences, Human Biology, 4th Year  
Pfizer Initiative in International Health-Center for Global Health Award for Research in Infectious Disease  
South Africa - HIV Drug Resistance Patterns among HAART-Exposed Patients Failing first and Second-Line Treatment in Limpopo Province

I spent the past summer in the lab of Dr. Pascal Bessong, professor of microbiology at the University of Venda (Univen) in Limpopo, South Africa. I conducted research on HIV/AIDS using blood samples from HIV patients who are suspected of failing drug therapy. I sequenced the viral genome of these patients, in an attempt to determine the mutations that are causing this drug resistance. In combination with information about these patients' drug regimen and clinical history, I will be able to draw conclusions about the course of treatment in patients in Limpopo who are failing drug therapy, as well as the efficacy of current virus assessment in these HIV-positive patients.

This project really appealed to me for a variety of reasons. HIV/AIDS is fascinating as a public health issue because many of the reasons that the epidemic persists are societal and cultural rather than scientific. We have reached the point in our knowledge of the virus and the epidemic that we must translate scientific research into public health and public policy endeavors in order for this understanding to have any effect. In the case of my project, it is scientifically established that drug-resistance monitoring and viral genome sequencing should be standard practice in the treatment of HIV/AIDS. However, in underfunded, resource-poor settings this is often impossible. How then do health-care workers identify drug resistance and react appropriately? This is one of the questions I am interested in looking at through this project. I am interested in studying the biology of HIV/AIDS through the lens of public policy, so this project was ideal for me.

At the outset of the research I thought that it would be very straightforward. The scientific techniques needed for this assessment are not particularly challenging – I thought the true work would happen in the analysis back home. I was very mistaken. Between facing institutional challenges, like delayed ethics approval, to infrastructural problems, like almost-weekly loss of electricity in the lab, I was challenged on a regular basis to complete the project. But if there is one thing I have learned, it is how to adapt. If there is no power on Monday, maybe on that day I would do data analysis and make a powerpoint about accomplishment. Then when the power returns, the experiments continue in earnest. Overall these sorts of issues did not present a problem, and more importantly they taught me how to be patient in research.

The other striking characteristic I have noted is during my time here is the pace of the research. Researchers are subjected to institutional delays, dependent on forces outside of their control. This really dictates the pace at which their projects proceed – a situation I experienced first hand in trying to collect my samples. This requires researchers to be flexible and adapt as well.

Outside of the lab, I have truly enjoyed my time in South Africa. While my project does not necessarily involve me interacting with members of the community, I have managed to do so through extracurricular activities, like practicing with the Univen volleyball team on a regular basis. I have made several good friendships that will last beyond this trip and may bring me back to Limpopo one day. The trip has truly made me realize how similar I am to students here and vice versa. I was really surprised and excited to find how easy it was to make friends here – despite language differences, cultural discrepancies, etc.
Lark Washington  
School of Engineering and Applied Sciences, Civil & Environmental Engineering, 3rd Year  
South Africa - Field Testing of the Copper-Impregnated MadiDrops in Limpopo Province: South Africa

This summer I had the wonderful opportunity to test the effectiveness of the copper-impregnated MadiDrops in rural Limpopo Province, South Africa. The MadiDrop served as a porous, ceramic water purification tablet that was infused with copper nanoparticles. I tested this point-of-use water technology for eight weeks along with several other undergraduate and graduate students as well as with the collaboration with the University of Venda and the local pottery cooperative.

The goal of this project was to address the global water crisis through this field study in the Ha-Mashamba community in Limpopo Province, South Africa. This region is the most strongly affected by a lack of access to water. The MadiDrop is constructed of local materials that can be found in the region and can be viewed as a more economically viable option for water purification on the domestic level.

My research was done in conjunction with a project funded by the Jefferson Public Citizens (JPC) that tested silver-infused MadiDrops. In a study of about thirty participants, we gave each household three MadiDrops with three buckets. Each participant was given a silver MadiDrop, a copper, and a control MadiDrop that was not infused with any colloidal metal in order to be used as a comparison. Water samples were taken from each of the MadiDrops weekly to measure coliform bacteria and the amount of silver or copper released in accordance to the World Health Organization (WHO) drinking water standard. The participants were very excited to take part in the study and really enjoyed the simplicity of the MadiDrops.

In conclusion, the copper MadiDrops did not appear to be as effective in the field as expected. Although, the amount of copper released never exceeded WHO standard which is 0.1 mg/L, there was very little change in the reduction of coliform bacteria. I hypothesize that this may be the case due to the differences in water chemistry in the region compared to the water that was used in the laboratory. On another note, the silver MadiDrops proved to work extremely effectively in significantly reducing coliform bacteria and remaining below the WHO drinking water standard.

Community Health in Limpopo: Design and Implementation of a Training Curriculum on Chronic Disease for Community Health Workers in the Vhembe District, Limpopo Province, South Africa

Ashley Keller, Christopher Winstead-Derlega, School of Medicine, 2nd Year  
Rochelle Zarzar, School of Medicine, 4th Year  
Laura Stamper, University of Virginia College at Wise, Biology, 4th Year  
Katherine Stanley, Batten School for Leadership and Public Policy and Public Health Sciences, 2nd Year  
Margaret Wightman and Christina Luckett, School of Nursing, Clinical Nurse Leader Masters candidates  
2013 Pamela B. and Peter C. Kelly Award for Improving Health in Limpopo Center for Global Health Scholars

This project represents a unique effort to facilitate interprofessional education at UVa. With support from a grant from the Josiah Macy Jr. Foundation (Led by Valentina Brashers, MD, FACP, Professor and Woodard Clinical Scholar, School of Nursing and Attending Physician, Department of Internal Medicine) and the Center for Global Health, faculty from the Schools of Nursing and Medicine mentored seven CGH Scholars including Clinical Nurse Leader students, Meg Wightman and Christina Luckett, medical students, Ashley Keller, Chris Winstead-Derlega, and Rochelle Zarzar, MPH and MPP Batten School student, Katherine Stanley and UVa-Wise student Laura Stamper in the design and implementation of health curriculum with local partners in Limpopo, South Africa.

Community home-based care programs serve as an important conduit for the provision of primary healthcare throughout the rural Vhembe district of Limpopo Province, South Africa. The current training of home-based caregivers focuses primarily on the management of HIV/AIDS and tuberculosis, yet many of
the patients encountered by these healthcare workers also suffer from other chronic diseases, such as hypertension and diabetes. To better enable the caregivers to provide for this population, interprofessional teams from the University of Virginia, the University of Venda, and the Limpopo Department of Health collaborated to develop supplemental hypertension and diabetes training curricula for the home-based caregivers. These student-led trainings were piloted at two community health centers, Thohoyandou and Tiyani. The trainings at each health center spanned two days and a total of 60 female home-based caregivers participated. A post-training evaluation was used to assess the utility and effectiveness of the curricula. Across all trainings, 94% of participants felt better able to help their clients as a result of the training, 93% noted that they could use the information they learned in their daily work, and 76% reported that what they learned would change their practice. Further long-term evaluation is necessary to determine participants’ retention of knowledge, but preliminary results suggest that training curricula, such as the ones employed in these pilot trainings, can successfully be used to educate home-based caregivers in hypertension and diabetes. In the future, supplemental trainings could be developed for other chronic diseases, such as asthma, diarrheal disease, and mental health.
Uganda
Projects in Collaboration with the MUST – UVA Research Collaboration

Emily E. Evans
School of Engineering and Applied Sciences; Biomedical Engineering, 4th Year
Pfizer Initiative in International Health-Center for Global Health Award for Research in Infectious Disease
Uganda - Validation of a Tuberculous Meningitis Case Definition Through Use of GeneXpert Technology in Mbarara

Tuberculous meningitis (TBM) is a major source of morbidity and mortality in regions of high HIV and Mycobacterium tuberculosis (MTb) prevalence, such as sub-Saharan Africa. TBM is difficult to diagnose in the best of circumstances and even more so in resource limited settings, such as in Southwestern Uganda. TB culture, the current gold standard for TBM diagnosis, takes up to 2 months to confirm. Delays in diagnosis make treatment difficult and are associated with poor outcomes. A recently published case definition developed a scoring system to clinically diagnose TBM, however little data have been published for validation. GeneXpert is a user-friendly PCR platform that delivers detection results in approximately 2 hours and provides additional data on drug resistance. GeneXpert has been validated for detecting MTb in sputum, but has had variable results in extra-pulmonary samples, such as CSF. We determined the sensitivity and specificity of GeneXpert PCR for TBM while conducting a clinical case definition validation study.

Patients (>18 years) with a clinical diagnosis of meningitis and who were admitted to Mbarara Regional Referral Hospital were enrolled in the study. CSF attained via lumbar puncture was analyzed in the Epicentre laboratory, using culture (both Mycobacterium Indicator Growth Tubes (MGIT) and Lowenstein–Jenson (LJ)), Ziehl–Neelsen (ZN) stain microscopy, and GeneXpert PCR. Using Stata (version 11) software, logistic regressions determined clinical and laboratory findings that correlated with a TBM diagnosis. Positive and negative predictive values were calculated for each TBM score (using positive culture as a reference) to determine the threshold for positivity. Receiver Operating Characteristic (ROC) curves determined the sensitivity and specificity of each TBM categorical score.

Out of the 100 patients enrolled at MRRH, 6 (6%) had culture-confirmed TBM. 1 (16.6%) was GeneXpert positive, which was also identified by culture. No resistance was detected. The GeneXpert platform is not validated to detect MTb in CSF. Optimization of positive and negative predictive values indicated that a clinical score under 7 could be used to rule out TBM, but not to rule in TBM. Further research in TBM diagnostics would benefit healthcare in Southwestern Uganda.

The Cultural Value Conservation Project (CVCP) promotes unique cultural values in specific regions throughout Uganda that have the potential to reinforce wildlife conservation efforts. Sites for the CVCP include Musambwa Island, Rwenzi Mountain National Park, and Lake Mbuuro National Park. Musambwa Island, located in Lake Victoria, serves as a breeding ground for millions of birds and reptiles. Approximately one hundred fishermen live on this island and have beliefs that sacred spirits are present in the birds and reptiles creating a unique coexistence. In Lake Mbuuro National Park, the bahima pastoral community that surround the park have a deep rooted cultural tie with the Ankole cow, which is being economically threatened due to cross-breeding with exotic cows to increase their milk yield. The cows are valued and bred for their beauty among other cultural values that the CVCP aims to promote. In Rwenzi Mountain National Park, some traditional healing techniques pose a threat to local wildlife. The CVCP works to promote practices that are environmentally friendly.
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