Consortium on Law and Values
in Health, Environment & the Life Sciences
2018-19 Proposal Cover Page

Applicant name(s)  Gabriel Saemisch  Email: saemi001@umn.edu

Project title: Cryptococcal Antigen Screening Usage and Drug Availability Analysis in Uganda

Department: MS Public Health College: School of Public Health

Degree program: Epidemiology

Faculty advisor: Lisa Harnack  Faculty advisor email: Harna001@umn.edu

Dept. Head: Alan Lifson  Dept. Head’s email: lifso001@umn.edu

Dean: John Finnegan  Dean’s email: sphdean@umn.edu

How did you hear about this funding opportunity?

☐ ACCU  ☐ Consortium website  ☐ The Brief  ☑ Dept. email/newsletter  ☐ Around the AHC  ☐ OVPR
Internal Funding Opportunities  ☐ Law Council email  ☐ Other

Funding

Total amount of funding requested: $3,000

Executive summary (maximum 200 words)

The requested scholarship funding will be utilized to conduct research in partnership with the Infectious Disease Institute (IDI) in Kampala, Uganda. The IDI focuses on strengthening health systems through research and capacity development in Africa with an emphasis on Infectious Disease. Recently, the Ugandan Ministry of Health (MoH) distributed a supply of 10,000 cryptococcal antigen tests (200 test kits x 50 tests/kit) to public health clinics in Uganda population to support screening and preemptive treatment of cryptococcal infection – a complication in late-onset HIV patients due to immunosuppression. Cryptococcal infection can be screened for with a simple point-of-care “dipstick” blood test in the weeks to months prior to onset of symptomatic infection of the brain - cryptococcal meningitis. To date, little is known regarding the actual usage of the 10,000 tests distributed and the goal of the proposed research project is to address this gap in information by collecting and analyzing information on test usage and drug availability in the area. This research will be conducted by traveling to clinics which received the cryptococcal antigen testing kits throughout the country of Uganda, collecting data on test usage, antifungal drug availability (i.e. fluconazole), and barriers to care.

Approvals

Check all appropriate approvals required for your proposal. It is not necessary to have all approvals at the time of proposal submission; however, approvals must be obtained prior to receipt of funding. If you have applied for approval but have not yet received it, indicate that below.

☐ IRB  ☑ Yes  ☐ No  ☐ NA  ☑ Application pending

☐ Other  ☑ Yes  ☐ No  ☐ NA  ☑ Application pending  Specify:

☐ The proposal is 1000 words or less excluding budget, biographies, references and citations.

☐ The proposal includes a work plan with a specific timeline using months or quarters to identify work to be done and completion dates.

☐ The proposal includes a 1-2 paragraph biography of the applicant and all co-investigators.

☐ The budget form is complete including the funds sought for this project, other pending applications for this project, and the amount/source of matching or other funds.
The applicant’s faculty advisor is copied on the application email. Professional students w/o advisors check No Advisor.

All necessary approvals are pending or received.

**Project Overview:**

The requested scholarship funding will be utilized to conduct research in partnership with the Infectious Disease Institute (IDI) in Kampala, Uganda. The IDI focuses on strengthening health systems through research and capacity development in Africa with an emphasis on Infectious Disease. The World Health Organization (WHO) estimates approximately 1.3 million persons are living with HIV in Uganda. However, the IDI estimates 65% of the country is covered by IDI services and ~290,000 persons living with HIV in Uganda have been supported through IDI outreach programs. These figures demonstrate the impact the IDI is having on the Ugandan population, and the goals of this research are no different. Recently, the Ugandan Ministry of Health (MoH) distributed a supply of 10,000 cryptococcal antigen tests (200 test kits x 50 tests/kit) to public health clinics in Uganda population to support screening and preemptive treatment of cryptococcal infection – a complication in late-onset HIV patients due to immunosuppression. Cryptococcal infection can be screened for with a simple point-of-care “dipstick” blood test in the weeks to months prior to onset of symptomatic infection of the brain - cryptococcal meningitis. To date, little is known regarding the actual usage of the 10,000 tests distributed and the goal of the proposed research project is to address this gap in information by collecting and analyzing information on test usage and drug availability in the area. This research will be conducted by traveling to clinics which received the cryptococcal antigen testing kits throughout the country of Uganda, collecting data on test usage, antifungal drug availability (i.e. fluconazole), and barriers to care.

The on-site research component of this study in Uganda will be conducted in two dimensions: gathering quantitative test usage data and qualitative barriers to care. This data collection will be conducted by gathering information from the Ugandan MoH Cryptococcal Task Force on clinics who were administered the testing supplies and traveling to clinics to conduct interviews on test kit usage and antifungal drug availability, partnering with local medical staff at the IDI. The Taskforce chair is Dr. David Meya MMed PhD, Associate Professor of Medicine at Makerere University; Adjunct UMN Associate Professor of Medicine. A standard

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data capture template will be developed to collect usage information for each clinic on the amount of the cryptococcal test kits received from the MoH, the number of positive tests performed by the clinic, and qualitative feedback on perception of the test, drug availability, and perceived barriers to care. Following data collection, the information captured will be analyzed to develop a geospatial drug usage map layered with information on the barriers to care to help deepen the understanding regarding areas with high/low usage. This information will then be leveraged to develop a “best practice” recommendation when implementing the drug in Uganda and comparable areas. Potential further analysis could be completed on effectiveness by linking test kit usage by area to associated outcomes, furthering the understanding as to what multidisciplinary factors are required or suggested when implementing the cryptococcal screening intervention treatment in a country like Uganda.

The proposed research will take place in Summer 2019. The Timeline is a 6 week data collection process abroad and an 8 week data analysis timeframe when returning to the states. Please reference the Gantt chart below for specific timeline:

I believe this research is aligned with my past experiences and my future career aspirations. Previously, I studied Biology as an undergraduate at Luther College in Decorah, Iowa. My senior capstone project analyzed the Zika Virus (ZIKV) outbreak and causation driving the gap in care for effective drug development. This was my first exposure to global health inequities, and how they drove resource constraints in underserved populations. This information is what attracted me to public health and has given me a strong foundation that supports my current studies in epidemiology and the pathophysiology of infectious disease. I have also worked with United Health Group (UHG) as a healthcare consultant for the past three years. Working at a large scale healthcare company like UHG has deepened my understanding of the many interdependent factors which drive health outcomes and the need to approach
community health as a system, not a silo. This methods and tools utilized in my position with UHG will also directly apply to the proposed research as I have conducted qualitative requirement gathering interviews, lead projects regarding data collection and analysis, and generated executive reports on several different topics, including public health initiatives.

Lastly, the proposed research project is exactly why I was driving to pursue my Masters in Public Health at the University of Minnesota. I am making a career shift from large payer healthcare to global health, a field that aligns directly with my interests and experience. This research will give me an opportunity to apply the knowledge and tools I have learned in the classroom to make a difference in the global health population. Conducting research with the IDI will also allow me to work with and learn from Prof. David Boulware (Medical School). Dr. Boulware is a distinguished expert to those in the field and the U of M network. The opportunity afforded by this scholarship will allow me to combine these two things – rewarding work with important mentorship – and will be an invaluable start to my career in epidemiology, infectious disease research, and helping those who need it most.
Bio, Gabe Saemisch

“Between the world and me”, words by Richard Wright, which I use to describe the most profound experience in my life. I spent my 21st birthday attempting to digest the cataclysm of the holocaust at Auschwitz Birkenau-II through an explorative course on Judaism in Eastern Europe. This course and the pertaining experiences opened my eyes, a boy from small town Iowa, to the injustice of which far too many populations have historically endured. Floods of introspection overwhelmed everything I knew and valued. Until this point, I was a typical pre-med student on a fast track to dental school. However, this experience instilled an overarching feeling of guilt which took over my every thought. “How could I sit on the sidelines, filling cavities, when such designed repression could still be prevalent today?”, I contemplated. This guilt, however, turned into a desire; a desire to do more, to help more. To help through this unescapable lens which lies between the world and me.

I knew my passion lied with helping those who have been wronged or failed and on a large population following this immersion. Therefore, I was driven to public health. The amount of genuine, needed impact one can have in the public health field is unmatched. Public Health practice provides one with an avenue of work consisting of depth, in serving specific populations, and also breadth to expand findings and benefit those in need on a greater scale. The notion of expansion becomes even more amplified as the world we live in becomes more interconnected by the day. This is what intrigues me about public health from a global perspective. Why, if the world is becoming more cohesive, are health disparities among different regions of the globe becoming more distant? This disparity was introduced to me when composing my senior thesis, “ZIKV: A Historical, Molecular, and Epidemiological Analysis”. This research opened my eyes to how many are left behind in the global health system. Often times this neglect is due to deprivation of research and funding for less profitable populations. As a humanitarian, I believe no person is more deserving of a well, healthy life than the next. This is why I am driven public health on a global scale; to do more - to help more - for those who need it most.

I acted upon these experiences and began my Masters in Public Health at the University of Minnesota this past fall. To date, my masters studies have focused on global health, epidemiology, and infectious disease. Additionally, with an undergraduate degree in biology, I have a sense of how diseases operate on a molecular level, which I believe to be very important when designing interventions to their spread. I am now eager to apply this base layer of understanding in epi and pathophysiology to a real world environment. I have been fortunate enough to secure an opportunity with Dr. David Boulware and the Infectious Disease Institute in Uganda this summer. This opportunity to conduct research in global health, epidemiology, and infectious disease is exactly why I came to the U of M and decided to pursue my Masters in Epidemiology. I could not be more excited to conduct this research and start using my knowledge and training to truly benefit the global population in need.
## Cryptococcal Antigen Screening Usage and Drug Availability Analysis in Uganda Budget Overview

Provide justification along with costs.

<table>
<thead>
<tr>
<th>Category &amp; Instructions</th>
<th>Justification</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Your stipend</td>
<td></td>
<td>$0</td>
</tr>
<tr>
<td>2 Speaker honoraria (for colloquia)</td>
<td>___ speakers x $ ______ honorarium</td>
<td>$0</td>
</tr>
<tr>
<td>3 Supplies &amp; Services</td>
<td>Supplies costs will be utilized to purchase/develop data capture templates, the costs associated with traveling the country for 5 weeks to clinics (gas, car fees, etc).</td>
<td>$500</td>
</tr>
<tr>
<td>4 Equipment</td>
<td>Identify and explain use. Allowable only if the equipment is necessary for this project. All equipment must be given to your dept. at the completion of your project.</td>
<td>$0</td>
</tr>
<tr>
<td>5 Travel</td>
<td>Estimated $3,000 Travel/Housing/Board cost. These funds will support the cost of flights to/from Uganda (~$1,500), Housing and fees for up to 6 weeks ($150 / week), and food while on-site at the IDI in Kampala Uganda ($100 / week).</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

**TOTAL BUDGET** $3,500

### Other funding: List other or matching funding you have requested for this project.

<table>
<thead>
<tr>
<th>Funding source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>the Walter H. Judd International Graduate &amp; Professional Fellowships</td>
<td>$2,500</td>
</tr>
</tbody>
</table>

*Consortium scholarship will allow for ability to lengthen research and study while in Uganda if above funding source allowed. Otherwise, Consortium will be full funding source if approved. Otherwise loans will be required to conduct research.