R25 post-trip essay
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The Practicum Site:

The district of Chokwe is situated in the southern part of the Province of Gaza, 230 km northeast of Maputo, Mozambique's capital. The city of Chokwe (within the district of Chokwe) is the 2nd biggest city in the Province of Gaza (after Xai-Xai) and has a population of 53,000.

The district of Chokwe contains a district hospital (Hospital Rural de Chokwe) and 20 satellite "health and maternity" clinics, which in all serve a predominantly rural population. Hospital Rural de Chokwe (HRC) is located in the 1st "bairro" of the municipal village of the same name (aka the city of Chokwe). It is a unit of reference not only for the district of Chokwe, but also for other districts of the North Zone (namely Guija, Mabalane, Massingir, Chicualacuala, Massangea and Chigubo). It directly serves a district population of 183,000, and one of reference of 259,000 (however, the same population may also refer to the Provincial hospital in Xai-Xai).

HRC is one of Mozambique's largest rural district hospitals, however, it has only 5 doctors, 4 mid-level general practitioners and 31 nurses. There are no surgeons, only 2 técnico de cirurgia. The hospital is divided into 4 main sections: maternity (38 beds), surgery (28 beds), medicine (26 beds), and pediatrics (26 beds). It also provides services in emergency care, radiology, physical therapy, dentistry, ophthalmology, orthopedics and psychiatry. Attached are a blood bank, a laboratory and a pharmacy.

Responsibilities during the practicum:

Every weekday morning I walked to the hospital at 7 AM to attend the morning meeting. All of the doctors, some nurses, and the medical students from Maputo, who were completing their rural rotation at HRC, would meet for 1-2 hours. The topic changed daily and included rounding on various patients, discussions about hospital logistics and continuing education presentations about medically relevant topics.

After the meeting, I went to the 4 main services to collect data on the in-patients in the hospital. This included basic demographics (age, sex, residence) and diagnosis. My study focused on where the patients were coming from so it was especially important to record the patient's residence/village. I collected data for 6 weeks and then analyzed it using various statistical tests in order to make a population map that demonstrated who the hospital is actually providing care to (see attached research paper for more details on the project).

One day a week I would also go into the operating room with the técnico de cirurgia, Dr. Sipriano. I would observe as he performed various operations. The most common surgical procedures performed at HRC were obstetric in nature or hernia repairs.

Positive aspects:

A major positive aspect of the trip was being able to work in a rural hospital. I have always dismissed the idea of working in a rural hospital in the United States even though various programs offer amazing incentives to do so. I was surprised by how much I enjoyed the experience in Chokwe. Because the hospital itself is modestly sized

and the number of patients staying there is fairly manageable I was able to develop relationships with patients that I would not have been able to in a big urban hospital (like that in the capital of Maputo). The patients often greeted me when I came in to collect data and it was very rewarding being able to see their full recovery process.

The relationship building I had with patients was rewarding, but even more so was getting to know the hospital staff. With a total staff of around 100 people it did not take long for me to learn the names of most of the doctors and nurses. It was very interesting learning about their road to medicine and how different the medical education system is here in Mozambique. I spent the most time with the técnico de cirurgia, Dr. Sipriano. He was very helpful in answering my questions about the surgery patients for my research project, and when I was with him in the operating room he always tried to explain the context of the disease and the procedure he was performing. He is planning on coming to the United States next fall to see the OR's at UCSD. I also became especially close to the other medical students that were on rotation at HRC. I spent time with them both in and out of the hospital. Aderito, one of the medical students from the medical school in Maputo (Universidad Eduardo Mondale, also known as UEM), helped me extensively with my project and is credited as a contributor on the paper. I know that I have made great friends here that I will stay in contact with for a long time.

One of the most interesting aspects of the trip was being exposed to multiple diseases that are uncommonly seen in hospitals in the United States. Many of the young children in the pediatrics ward come in with a form of malnutrition known as Kwashiorkor. It is a type of malnutrition that often develops after a mother weans her child from breast milk too early, and replaces it with a diet high in carbohydrates, especially starches, and deficient in protein. I specifically remember one of our lecturers this year telling us that we most likely would never see this disease during our careers. Similarly I saw many patients with advanced stage HIV, tuberculosis, malaria and polio. Most diseases in the United Sates are fairly well managed, so the later-stage manifestations that are associated with advanced disease (including Pott's Disease, Kaposi's Sarcoma and Burkitt lymphoma) are rare in American patients. I saw all of these diseases during my time in Mozambique and many others. It was an invaluable learning experience for me.

Negative aspects:

The principal causes of hospital internment at HRC included malaria, malnutrition (especially in the pediatric ward), HIV (known as SIDA in Portuguese), tuberculosis, pneumonia and accidents (especially burns and car crashes). What I was most blown away by in HRC was the seriousness of the disease here. Hospital statistics from 2011 report that within the medicine ward at HRC (therefore, not including pediatric patients) 30% of admissions were HIV positive. TB and malaria each represented 10% of the total patient population. In addition to confronting HIV, TB and malaria on a daily basis, I witnessed multiple deaths and many patients in extreme agony. I understand that part of working in a hospital (especially a hospital in a developing country) involves being around very sick people, so I would not necessarily

characterize this as a “negative” aspect of the trip per se. However, it was not always easy being surrounded by so much suffering and death on a daily basis. I definitely relied on some important coping strategies to keep myself mentally and emotionally sane during my trip.

The most frustrating aspect of my time in Mozambique was my inability to communicate with many of people in the hospital. I only knew basic Portuguese when I arrived in June, and it is almost impossible to function here without being able to speak Portuguese (very few people speak English). My speaking abilities improved dramatically during my time in Mozambique, however there were still communication problems. Only about 50% of the population in Chokwe can speak Portuguese. The other half uses various African languages (the most common being Changana). I feel as though I could have gained more from the experience if I had taken a Portuguese course before arriving in Chokwe, as well as trying to learn some basic Changana phrases.

When I arrived at HRC I realized that there was very little communication between the UCSD doctors and the doctors in Chokwe who together form the Medical Education Partnership Initiative (MEPI). There seemed to be some power issues between the director of HRC (who is under contract with UCSD) and the main point of contact for UCSD in Mozambique. I was confused as to who I should be reporting to because although the American Doctor, Steve Bickler, was ultimately the principal investigator of my project, his presence was minor compared to my interactions with the Mozambican doctors. Additionally, it was apparent that some of the hospital staff did not know what I was doing there. In an effort to explain my presence I drafted a short summary of my project (in Portuguese) and presented it at one of the morning meetings. In the end this helped immensely and allowed me to continue my daily routine without disturbing the other staff.

Unique experiences/events:

One of the weekends I was in Mozambique we left Chokwe for a few days and drove 6 hours up the coast to Tofo. Tofo is primarily a tourist destination and attracts many vacationers during its on-season. We were there during the off-season (which oddly enough was still sunny and 85 degrees) and the whole town was basically deserted.

Tofo is considered Mozambique’s unofficial diving capital, and the beautiful beaches here are home to over 300 whale sharks, as well as manta rays, dolphins and migrating humpback whales. We were lucky enough to have the chance to snorkel with all of these animals. Between breath-taking sunrises over the Indian Ocean, diving in the afternoon and amazing seafood dinners, I can only describe the experience as unforgettable. It was definitely an enjoyable break from 6 AM alarm clocks and hospital rooms.

Overall Assessment of the Experience Related to Practicum Objectives:
My learning objectives for the practicum were:

> Generally: Participate in operational, epidemiological, translational and clinical research at UEM and its allied institutions to improve healthcare in Mozambique.
> Specifically: Assess the physical and human resources available for medical care and the unmet need for care in the rural areas of Mozambique in hopes of improving access to care at the primary referral hospital level in Mozambique.
> Personally: Focus on major problems with access to care at the through various methods, including population mapping.
> Additionally: Gain hands-on clinical experience by shadowing surgeons in the OR.

In essence, my major goal was to participate in clinical research that specifically assessed the access to, and need for, medical care in the rural areas of Mozambique. I feel as though I have completed this goal successfully and that I have also obtained a thorough understanding of the health-care system here in general. I have attached my finished research paper, which is currently being submitted for publication. This paper is also meant to serve as my "discussion on a particular topic related to my trip (access to medical care at the district level in rural Africa) and its global health parameters in a developing country".

Some of the things I learned in the process of conducting the research project include:
-No matter how much planning you do from the United States there will inevitably be changes that you have to make to the research plan/methods. Ultimately it was not feasible for me to know how the data collection would run before I came. I initially had difficulty collecting data as I could not read the handwriting on many of the patient's paper charts. Additionally, I could not ask all of the patients about their residence because many of them did not speak Portuguese. In an effort to solve the problem I did some searching through archives until I found a good, detailed map of the district. I copied down all of the names of the potential villages (or "bairros") that the patients were from and carried that list around with me. The few letters I could make out from the chart were enough to allow me to determine the patient's residence by matching it to the list of potential villages (and asking for clarification when necessary). After about a week or two I started recognizing the names of all the villages on my own and no longer needed the list to help me. This strategy was not something that I could have planned before arriving in Chokwe as I did not anticipate legibility as being a potential barrier in data collection.

-You need a certain number of patients to have statistically significant data. Before arriving in Chokwe, I had not seen any information regarding how many patients pass through the hospital in a given month (and specifically, how many of those are considered surgical patients). Initially I proposed to analyze only the surgery patients, but it became obvious very quickly that there were not going to be enough of them to

make a thorough data set. In order to see worthwhile results I needed a much larger sample size, so I revised the project to evaluate the total hospital population. I still ran statistics on the surgical subset of patients but I also decided to analyze the total hospital population to get a better idea of the general access to care that HRC is providing. In the end this allowed me to see important trends and differences in the patient population between the 4 major services that I would have otherwise missed.

Other things I learned during my time in Mozambique:
-Hot water is a luxury that I will no longer take for granted.

-Not everyone has access to the internet. This was actually a major issue for me. I only had wireless internet between the hours of 7 PM and midnight, and on top of that it was unreliable and very slow. It was definitely a challenge squeezing all of the research I had to do for my project (as well as emailing family and friends) into those few hours.

-Roosters crow at all hours of the day. Do not trust them as an alarm clock.

-Knowing the language of the country you live in is an invaluable tool and you should make every effort possible BEFORE your trip begins to practice those language skills.

-Some things you can find in even the most rural parts of Africa. Most importantly for me were cell phones and ATMs. For the locals, those things are pool tables, beer and music.

Overall Assessment of the Experience:
Overall the experience that I had in Mozambique was life-changing. I learned A LOT about what it means to actually conduct global health research in a developing country. I experienced working in a rural hospital and confronted diseases that I am unlikely to be seen to this extent in the United States. I made many great friends and travelled to a few incredible places. I definitely struggled at times and I missed home quite a bit, but I would do it again in a heartbeat.

Citations:
1. Ministerio da Adminstração Estatal. *Perfil Do Distrito De Chókwé Província.* Vers 2005. http://www.portalgoverno.gov.mz/informacao/distritos/gaza/chokwe.pdf.
2. Galukande M, von Schreeb J, Wladis A et al. Essential surgery at the district hospital: a retrospective descriptive analysis in three African countries. *PLoS Med.* 2010;7:e1000243

Also, please see my research paper from this experience, which will be submitted separately.

My preceptor, Dr. Steve Bickler, and primary field investigator, Peter Bendix, in front of HRC.

A typical patient room at HRC

Dr. Sipriano in the operating room

The UEM medical students in the daily hospital meeting

Working on the research project with Aderito

Weekend trip to Tofo

The street in front of our house

Afternoon Snack

The house

Our living room/work space