I. Afro-Background

Guatemala is a region in Central America, historically inhabited by various indigenous groups including the Maya, which has over 30 different communities, the Zapotecs and Xinca. It was colonized by Spanish in the mid-16th century. Guatemala declared its independence from Spain in 1821. The date of the arrival of the Afro-Caribbeans (known as Garifuna) into Guatemala is estimated somewhere between 1801 and 1836 (Poll, Mejoa, Szejner, 2002; Martinez, 2013). They arrived in the Amatique Bay, what today is known as Livingston. At this time the region was primarily inhabited by the Q’eqchi’ and Ladinos (Guatemalans of mixed descent). This was the beginning of this multi-cultural, multi-lingual region that Livingston is today.

II. Research Project Purpose

Non-infectious Chronic Diseases (NCDs) are a new priority in global public health; few countries have made NCDs a public health priority, including Guatemala, where little research has been conducted on the prevalence and impact of NCDs on the population. This research is a starting point to better understand the experience of diabetes mellitus among the population in Livingston, which is made up of Garifuna, Q’eqchi’ and Ladinos. The initial visit served as a preliminary examination of the prevalence of diabetes mellitus and the experience of local health care providers in prevention, management and treatment of this disease.

III. Research Experience

The goal of this initial visit to Livingston was to map the local healthcare system, local leaders and collect statistics on the prevalence of diabetes in the population. The researcher conducted semi-structured interviews with local health care providers and the local ministry of health statistics office. The major challenges were figuring out the formal and informal coordination dynamics among the hospital and clinic workers and the time constraints upon meeting with the healthcare providers.
IV. Findings

Cultural/Language knowledge

In the region there are three main ethnic groups: the Garifuna who speak language also called Garifuna, the Kakchiquel whose language is also referred by this name and the ladinos, who speak Spanish. The pueblo, main part of the town, is inhabited by Garifuna and Ladinos, while the rural areas, the aldeas (hamlets), are primarily inhabited by the Kakchiquel. The shared language is Spanish among the individuals from these various groups. The Garifuna and Kakchiquel are bilingual in their language and Spanish. According to Dr. Contreras there is also a portion of the population with Indian background (in Spanish referred to as hindu”), who speak Spanish.

V. Contacts/Relationships established

Gladis Contreras, MD

The only hospital in Livingston is the CAIMI (Centro de Atención Integral Materno Infantil), the Integrated Maternal and Infant Health Center, which are centers primarily located in medically underserved, rural areas of the country. The aim of these institutions is to provide prenatal, natal and post-partum family planning, nutrition and childhood vaccinations. However, they also provide general consults and mental health services. I was able to speak with the attending physician, Dr. Gladis Contreras, of Garifuna descent from Puerto Barrios (an adjacent municipality). She studied medicine in Guatemala’s most prestigious university, Universidad de San Carlos and has practiced medicine for over a decade, 11 years in the highlands of Guatemala among various Mayan groups and more recently was offered this position at the CAIMI in Livingston. The day of our meeting she was very busy as she was the only physician giving consults. She explained that there are normally three other physicians on staff: the hospital director, an emergency physician, a Cuban physician (Guatemala is recipient of Cuban physicians who have a mandatory two year period of service outside of Cuba). At this moment they are waiting for the next Cuban physician to arrive (the last one finished her stay a few days
ago), the emergency physician is out on vacation and the director is at meetings out of town.

Dr. Contreras mentions that the most common cause of morbidity are respiratory diseases, mirroring the national statistics. Among chronic illnesses the top are hypertension and type 2 diabetes mellitus. As far as treatment, currently the CAIMI only has glibenclamide but not metformin (the most common treatment). To access metformin patients have to buy it from one of the two pharmacies in town. The laboratory exams available at the CAIMI are urine, feces, blood glucose and HIV testing. For other lab work or patients that need specialized care are referred to Hospital Nacional la Amistad Japon (A private Japanese government funded hospital) across the bay in the municipality of Puerto Barrios. According to Dr. Contreras the only other organization that provides medical services is Ak’Tenamit, a private institution. Occasionally a foreign organization called Barru Sartu come and do medical missions, including minor surgeries.

Dr. Contreras referred me to the Office of Statistics on the second floor of the hospital for the most up to date data.

**Ingrid Gamboa, Licenciada**

I spoke to Lic. Ingrid Gamboa, the director at the Office of Statistics. According to Lic. Gamboa the Livingston total population is currently 19,778. The hospital did not start tracking diabetes prevalence and incidence until 2008, at which point there were 342 new cases. In 2013 there were 181 new cases and over 400 already diagnosed patients. These numbers only represent those patients who receive medical care at CAIMI and exclude those in the IGSS (Guatemalan Institute for Social Security) and private coverage, and those that are living with diabetes but have not been diagnosed. The statistics are not broken down by ethnicity or income, but Lic. Gamboa believes that the prevalence is highest among the Garifuna followed by the Qu’eqchi’. She attributes this rise in diabetes prevalence to the shift in diet from a traditional diet to one that includes more junk food (“comida chatarra”), sodas and processed food with preservatives. When asked about common beliefs surrounding diabetes, she replied that there are many. She has heard that some people attribute it to witchcraft and “penas”, stressful events. The services provided for diabetic patients at the CAIMI include an educational chat
when the patients is newly diagnose, treatment (medications are free at the CAIMI, the problem is usually the shortage of medications) and follow-up (glucose monitoring). Lic. Gamboa also mentioned that an initiative that recently started in the urban parts of Livingston, the “economia solidaria”, economy in solidarity is teaching families about horticulture, how to grow their own fruits and vegetables in a garden. She says that it is a small project, but that she believes this is one way to address the root cause of diabetes: getting back to more natural nutrition.

Jose, Auxiliary Nurse at Ak’tenamit

As Dr. Contreras previously mentioned, the only other entity providing health services in Livingston is Ak’tenamit. This organization is located in the rural part of Livingston, along the Rio Dulce (river), as they service the population living in the hamlets for whom going to the CAIMI in the town may be inaccessible (some areas can only be reached by boat and long hours of walking). When I visited the nurse on shift was Jose. He explained that at this moment the clinic is serviced by two auxiliary nurses, himself and Maria, who individually take turns working (they alternate 24 hour shifts). The day I visited him, he was performing all the task from patient intake, to consult and dispensing medications. Jose explained that this is normal for the nurse, as they are the only staff at any given time. The Ak’tenamit workers have continuous training from the CAIMI, so are formally affiliated with the hospital. However, the CAIMI does not send physicians to Ak’tenamit. Instead the organization, which was founded by a Canadian citizen living in Guatemala City and continues to receive funding through private donations from abroad, rely on medical volunteers from abroad (usually the U.S). Both professional nurses and physicians volunteers are accepted for a minimum of six months. At this time, however, there are no medical volunteers and he does not know when one will come, so the medical responsibilities fall on the auxiliary nurses. His work is truly one of a family physician, attending patients of all ages and various illnesses. Jose explains that the consult with medications included costs about Q10 (about $1.40). Most of the medications are received through private donations from abroad and through the Rotary
Club. A few years ago all the medical services were free, but in recent years there have been less monetary and medical donations and so the organization started charging a small fee to stay afloat. Ak’tenamit medical staff used to do monthly visits to the different hamlets, but because of the lack of staff, medications and gas (for the boats) they are no longer able to do that. This organization services about 32 communities.

When talking specifically about T2DM Jose mentions that so far he has seen about 35 cases. However, these are several cases because people usually do not seek medical attention until they are seriously ill. He has seen advanced cases in which the patient suffered severe weight loss and blindness. When patients are first diagnosed they receive educational chat on diabetes management and are told to return monthly for glucose monitoring. Currently there is diabetes prevention work being done. Jose also attributes the increase in T2DM to a changing diet that includes junk food and excess soda drinking.

**Pharmacies**

There are two pharmacies in Livingston. One is on the main street and is a small venue with only a sign that reads “farmacia” outside. I visited this location first. Here the attendant told me that diabetes medications are his “bread and butter”. Based on his experience, he estimates that at least 35% of the population has diabetes. He attributes T2DM to eating sugar, shock (“susto”), poor nutrition and genetics. He thinks the prevalence is highest among the Garifuna, Ladinos and lowest among the Q’ueqchi’. The most common consequence of diabetes he witnessed is blindness. At this point in time the pharmacy only had Metfomin 850mg pills which sold for Q1 (0.75) per pill. Though he was not busy, he made it clear that he did not want to speak anymore after a few questions. I thanked him for his time and moved to the next pharmacy.

At the Farmacia Parroquial (operated by the local Christian church) I spoke with a female attendant.

She estimates that they service about 20 diabetic patients per day. The most common consequences of T2DM are limb amputations, neuropathy and blindness. Some of the causes include shock, anger and fear. Hypertension is a common comorbidity. She thinks that this
illness is more prevalent among the Garifuna. This pharmacy has both Glibenclamide and Metformin in stock. Four pills of Metformin are sold for Q5 ($2.85) and four pills of Glibenclamide are sold for Q2.

VI. Potential risks and challenges for future study

The next step in better understanding the effects of T2DM among the Livingston population would be to speak to individuals and their families about the impact of diabetes on their lives. Because it is a small town, most people know who is a resident and who is new in town, so that it takes time to build the trust necessary for people to share personal information. In my short stay I tried to work through the limited channels I had to speak to individuals with diabetes, mainly the hospital and clinic, but this was difficult as the days I visited these locations there were no diabetic patients per the medical staff. Additionally, in casual conversation with residents I met at the market or restaurants, they were hesitant to guide me in the direction of a diabetic patient, which is understandable as people did not know me or what my intentions were with this diabetes investigation. This challenge can be mediated by investigator dedicating the necessary time to gain the trust of the community members. This would entail living in the region for several months, at minimum, to become engaged in community health work and to be able to explain the relevance of this investigation to their community.

References
