Community Engaged Research in Salvador, Brazil

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Infectious diseases are unevenly distributed around the world, with a disproportionate concentration in the developing world. Yet even in a place like Brazil, a country which has grown economically and in its international presence as evidenced by the two major international sporting events it will host — the World Cup in 2014 and the Olympics in 2016 — inequality runs high, and the problems of the developing world exist just a short distance from the problems of the developed world. Brazil has high incidences of both infectious diseases associated with a lack basic sanitation and so-called “first-world diseases” such as hypertension and heart disease.

Leptospirosis is a disease that has had devastating effects on in Salvador, Bahia. It is a disease that is typically transmitted when people step in pools of water that have been contaminated with the urine of rats that have been infected with the leptospirosis. One of the hallmarks of the disease is its similarity to the symptoms of dengue fever. Dengue fever is transmitted by mosquitos that have been infected with the dengue parasite that can lead to high fever and severe muscle aches that some patients describe as having the sensation of their bones being crushed. Though incredibly painful, dengue fever often goes away with minimal care. And, since there is no known treatment other than relieving the symptoms of the disease, few people bother seek medical treatment. Leptospirosis, on the other hand, is deadly. However, unlike dengue, antibiotics can treat the disease when diagnosed early enough. To complicate matters, both dengue and leptospirosis are more likely to occur during the rainy season when pools of stagnant water provide breeding grounds for mosquitoes and rats.

Researchers from Fiocruz and Yale University have partnered with community members from one of the neighborhoods most affected by leptospirosis — Pau da Lima — to come up with a multi-pronged approach to combat the disease. My research focused on documenting the various organizations that have been involved with the project for over a decade to address the disease. By interviewing the leaders of community organizations, representatives from the prefecture of Salvador in the ministries of health and housing, and private firms that were contracted to be involved in the project, I gained a new understanding of the type of research that I hope to do for my dissertation. Additionally, since this project involved working with community residents, I got to see how local knowledge was not only vital to the work that Fiocruz has been doing, but has changed the lives of many residents who have gone on to pursue higher degrees

**Comunidade**

People familiar with poverty in Brazil have probably been introduced to the term *favela.* Favela is synonymous with slum communities that are often unplanned parts of Brazilian cities. They are characterized by their lack of infrastructure, high levels of poverty and unemployment, narrow walkways, and high incidences of crime and violence. But in Salvador, the term favela is seen as pejorative by many people who live in and or work in communities that have been marked by others as such. Researchers at Fiocruz Salvador as well as representatives of government agencies and community leaders will use the term *comunidade,* which means community, or *comunidade carente —* meaning impoverished community, in place of favela. The key word is community, acknowledging that the people that happen to live in conditions of poverty are still people deserving of dignity and respect.

Pau da Lima is the third largest neighborhood in Salvador, with a population of approximately 120,000. Pau da Lima encompasses hills and valleys, with new settlements at the base of the valleys and at the tops of the hills having poorer infrastructure than the more established portions of the neighborhood along the major commercial streets. The narrow and winding roads and passageways that connect portions of the community can easily cause outsiders to get lost. In addition to the safety concerns because of the high level of violence, researchers from Fiocruz actively involved community members in the design and implementation of their research.

Gilberto Fereira, the administrative director of the Associação de Moradores de Pau da Lima (Residents Association of Pau da Lima, AMPLI), gave me a tour of the communities along the base of the valley. The homes that were built here were of poorer construction quality, with leaky roofs, and often makeshift bridges were built to allow residents to cross over the open sewer that runs along the valley floor. Gilberto told me that during heavy rains many homes flood because of the poor drainage, and I saw several homes that were abandoned because the damage caused by previous flooding was so severe. At the bottom of the valley many homes were built adjacent to open sewers that carry trash from the streets and homes along the ridges of the hill as well as trash that residents discard in open areas along the base of the valley because there are no adequate places to dispose of the trash.

**Collecting rats**

Researchers at Fiocruz Salvador have partnered with the Centro de Controle do Zoonozes (CCZ), the city animal control agency, to collect rat specimens in the community of Pau da Lima. The goal of the project is to identify where rats that are infected with leptospirosis are concentrated throughout the community in order to determine where rat control efforts should be targeted. I joined the researchers on their rat collection and got to see first-hand the way the researchers work. First, researchers go out in teams of two, where one team member is either a community resident or has worked in the community for a number of years. The research teams also wear lab coats to designate themselves as researchers. Getting around can be challenging as roadways in the community can vary from steep narrow passageways with uneven pavement, to unpaved dirt steps that can be slippery after the rain. Most residents walk around in sandals which leave them susceptible to infection especially if they have any open wounds.

**Changing lives**

The community members that I spoke with had many positive experiences with the research team. In fact, several research team members used to live in Pau da Lima and have gone on to pursue degrees in nursing as well as biomedical research. Other community members who have previously been involved in the research in Pau da Lima told me that, if not for the opportunity to meet researchers in their community, they might not have known that it was possible for them to pursue those types of careers. Though one of the main challenges of the research in Pau da Lima has been that leptospirosis continues to infect and kill residents that are not diagnosed and treated quickly enough, the progress made by researchers and community working together has lead the development of a quick test for leptospirosis that will be manufactured and used by the community clinic.