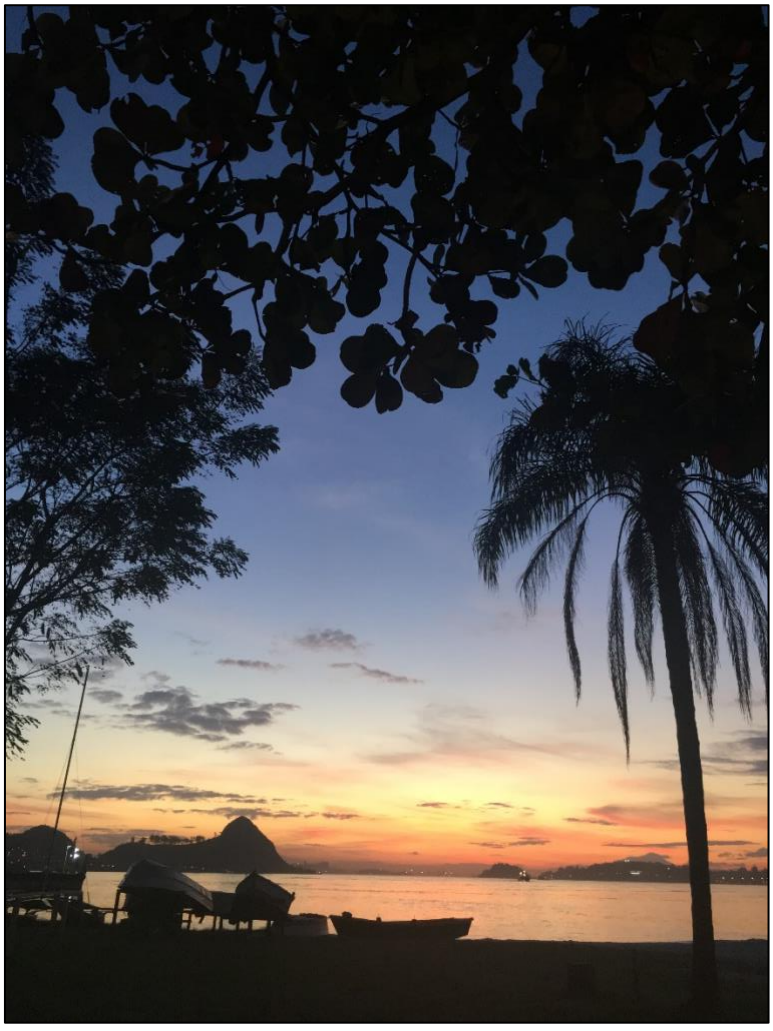
Emily Pearman

Urinary Tract Infections in a slum community in Brazil

I walk along the beach in Charitas, the neighborhood where I will work, located in the city of Niterói, known for its convenient location across the bay from Rio de Janeiro City. As I walk through Charitas, I pass nice restaurants, beautiful apartment complexes, bars, and high end shops. Walking along the beach, I was amazed at the beautiful view and surrounding scenery. I was impressed and excited to have this as my view from work. A view of the palm trees, the beach, the water, and there on the other side of the bay, Rio de Janeiro City. I could see all the major icons across the bay, Christ our Redeemer, Sugar Loaf Mountain, Pedra da Gavia. I walked past a ferry station and stopped to watch the crowd rush to catch the last ferry in order to arrive at their work in Rio de Janeiro City. A convenient set up for residents in Niterói who want to take advantage of the many job opportunities that exist in Rio. Right after the ferry station I turn left and walk away from the beach and up a street, but only for about 500 feet, then I arrive at a cement staircase. This is not an evenly constructed stair case, each step is a different height and size, the railing only exist for half the length of the stairs. At the top of these 15 steep steps is the Health Post I will be working at.



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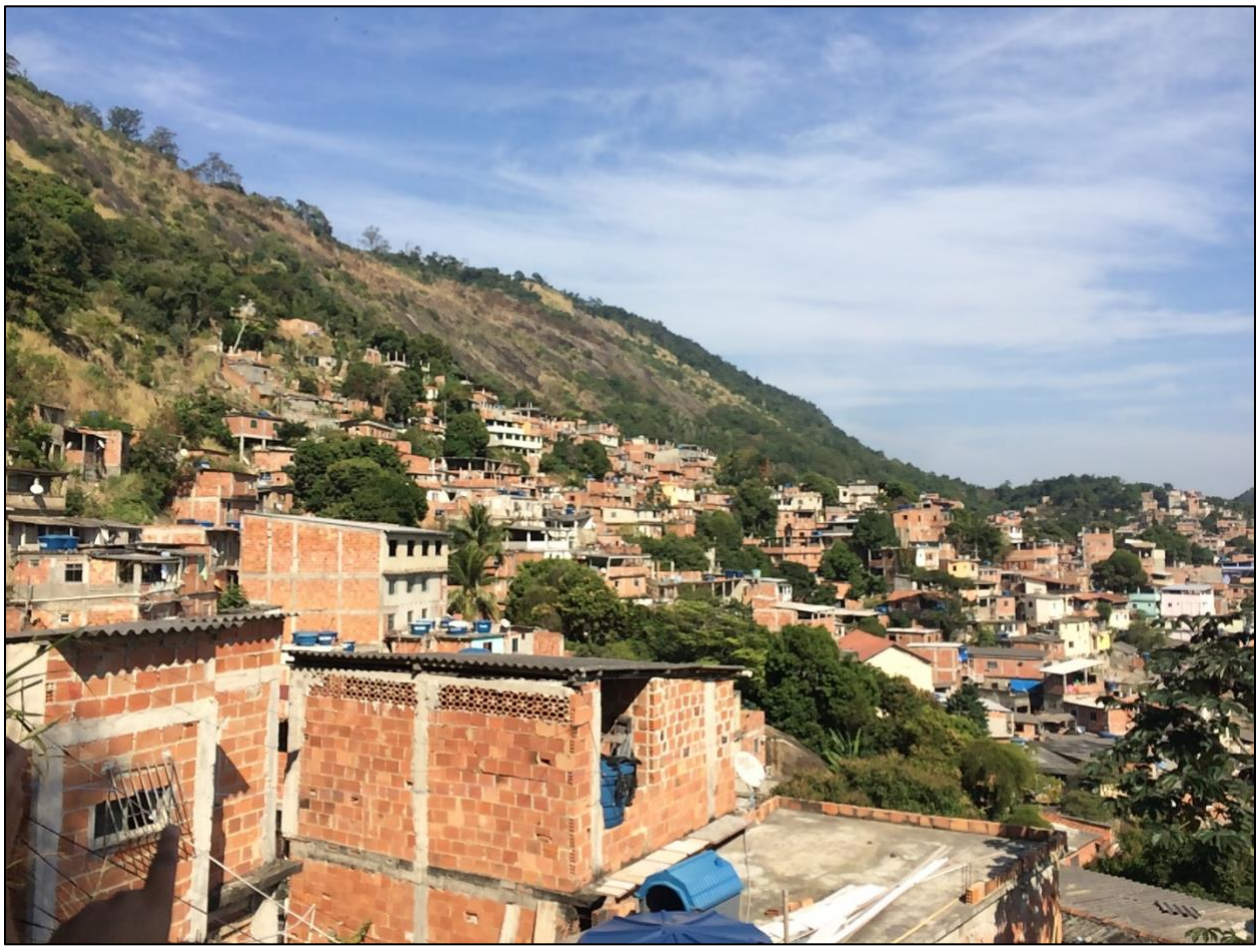
Although only a quarter of a mile from the nice apartment complexes that I saw, and only 100 yards from the beach front and the ferry station, the community I work in is a stark contrast to its neighboring communities. That is because this community is one of the many Favelas in Rio state, where according to the WHO, twenty six percent of the population resides. Favelas are informal slum residence. The residents here have no addresses, there are no paved streets leading to their houses, there was not always running water or gas in these houses. This community, Preventório, was formed like most other Favelas. It begun less than 100 years ago when rural and poor Brazilian migrants came to the city from the North East in hopes of finding a better quality of living. Now approximately 70 years later, Preventório is a thriving but poor community.



I came to work in this community with hopes of better understanding the incidence of severe and recurrent Urinary Tract Infections in this population. Although this is important working in this community opened my eyes to many other problems. Mainly the violence and lack of access to health care, which in turn is exasperated by the violence in the community. For example, to access the health post from a house in this community you need to have a decent amount of mobility to come down the hill, without real roads, and climb the steps to the health post. This is almost impossible for handicapped residents and residents with diabetes, who need healthcare the most.

Expounding on that anytime there is a shooting or word gets out that police will be entering the community, in order to remain safe, the community comes to a standstill. All businesses including the health post close and residents remain in their homes to ensure they are not caught in crossfire.

When they health posts are open they are often lacking essential medicine, and although the staff there works very hard, there are not enough medical professional to service the needs of the community. Wait times are very long and appointments are often only made for months ahead. Thus if you need care urgently you will most likely not receive it at these posts.

This created a problem for my research which was meant to look at Urinary Tract Infections by interviewing patients who came into the health post for treatment for their infections. What I didn't know when developing my research proposal was that most patients with a Urinary Tract Infections complaint don't bother to come to the post at all, knowing that the post will not be able to help them for some months. "How am I supposed to know three months in advanced that I am going to have an infection?", as one community member eloquently put it. Instead they wait until the infections is severe and they will then be admitted to the emergency room for free and immediate treatment. This however comes at a much larger cost for the hospital had they just had the appropriate supply of medical professionals and infrastructure in the community in the first place to prevent this severe infections. On top of that the patient is now out of work for seven to ten days while they wait to finish the entire course of their antibiotic treatment intravenously in the hospital, as is the protocol.

Since, I barely had community members coming into the community with Urinary Tract Infections complaints I decided to do a retrospective cohort study and used existing lab results to track down community members who I knew had had an infection in the last year.

The purpose of this research was to characterize patterns of resistance and their association with clinical symptoms of E.coli caused Urinary Tract Infections (UTIs) in an urban slum population outside of Rio de Janeiro. E.coli is the number one cause of UTIs and resistance amongst some E.coli strains will lead to Recurrent Urinary Tract Infections (rUTIs), defined as more than two UTIs in six months, regardless of treatment with antibiotics. In patients with immunosuppressive disorders such as type 2 diabetes rUTIs are even more common. rUTI's have a significant morbidity a mortality in urban slum populations, also known as favelas or informal residences, where diabetes has higher prevalence due to poverty and lack of access to healthcare and healthy foods. There is an obvious unequal distribution of UTI morbidity and mortality in slum populations yet this distribution is poorly characterized due to the difficulty of conducting research in such a population. This study is unique in that not only does measure the morbidity of UTIs in a slum population but it also looks for resistance patterns in clinical isolates and the association between clinical symptoms and resistance profiles.

In the last year there were 278 samples of urine submitted for UTI culture testing from the community I was studying. Of these 278 samples 29 were positive and 17 of these positive samples where from E. coli caused UTIs. As predicted by other literature a large majority of these UTIs where E.coli caused. I also compared the incidence of resistance among E.coli caused infections inside the favela community and outside the favela community and found that those residing inside a favela community that did have an E.coli caused UTI infection also had two times the risk of having strains resistant to at least one drug compared to the control population residing outside the favela community. Resistance is obviously a huge problem in these favela communities and needs to be better described in the various informal residences residing throughout Brazil.

I also conducted 20 interviews in this favela community with patients that were known to have rUTIs and found a significant morbidity due to these recurring infections. Including that 6 of these patients were hospitalized. And 10 of these patients have had more than 4 infections in the last year.

Along with the high morbidity and resistant problems existing in the favelas there is a lack of access to medical care that is preventing early treatment and thus prevention of severe complications due to UTIs. Many patients that I spoke were frustrated with the wait time to get an appointment at the local health post and thus they chose to wait until the symptoms were so severe that they had to be sent to the emergency room, where they incur larger costs than if they were initially treated at the health post, and must be hospitalized for 7 to 10 days while antibiotics are intravenously administered leaving the already impoverished patient unable to work or take care of their kids at this time. Not to mention the birth complications these UTIs risk if the patient is pregnant.

In conclusion the problems within this community are not just molecular but social. Along with better describing resistance and using this data to inform treatment these health posts need a better availability of antibiotics and more staff allowing more patients to be seen. Though describing molecular patterns of resistance is important for combating the issue of UTI's it just scratches the surface of this problem.