



Reducing incidence and prevalence of diarrheal illnesses in rural Honduras

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Background

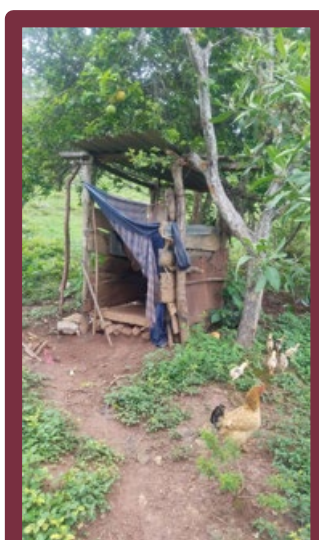
In 2017, the fourth leading cause of death and disability in Honduras was due to diarrheal illnesses. On a global scale, there are more than 2.2 million lives lost each year due to these infections. The primary objective of this study is to reduce the morbidity and mortality of diarrheal illness in rural Honduras by addressing the underlying causes of diarrheal illnesses. Our multidimensional interventions, which were created after careful and thorough review of current available literature, will focus on removing the antagonists to diarrheal disease (health hazards) by implementing culturally acceptable, scalable, and sustainable preventative measures. Some of the interventions include hand and oral hygiene campaigns, establishing clean drinking water, proper disposal of human waste via latrine construction, health education and the training of Village Health Workers.

Village: Gracias a Dios, Honduras

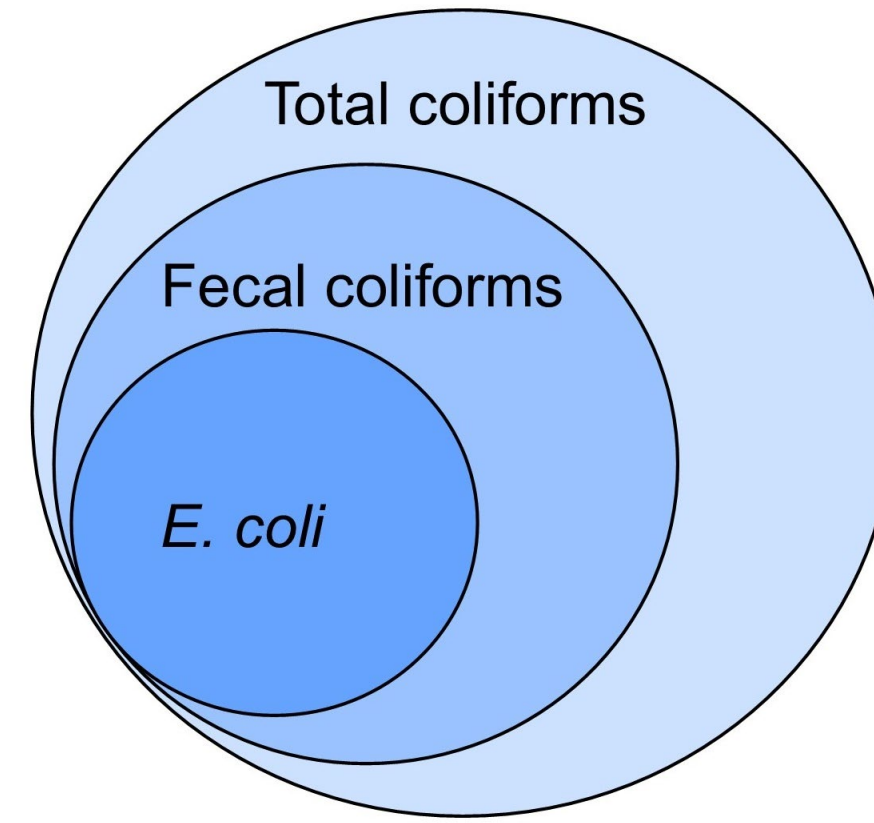
During previous work with the Rotary International, my team was informed that the Honduran Health Ministry in Honduras identified a geographical area in the surrounding villages of Olanchito that represented the highest levels of diarrheal incidence. In these communities, local initiatives were unable to address the severity of the diarrheal incidence due to extremely limited local and governmental resources. Therefore, Rotary members from both the US and Olanchito met with village leadership to discuss projects that could be beneficial, including objectives and village responsibilities for implementation and sustainability. Village leadership reviewed project proposals, provided additional insights, and committed to active leadership and participation which is a critical component to help avoid causing future mistrust. I have chosen to work in Gracias a Dios based on their high level of water contamination per water analysis reports.

Current Project Accomplishments

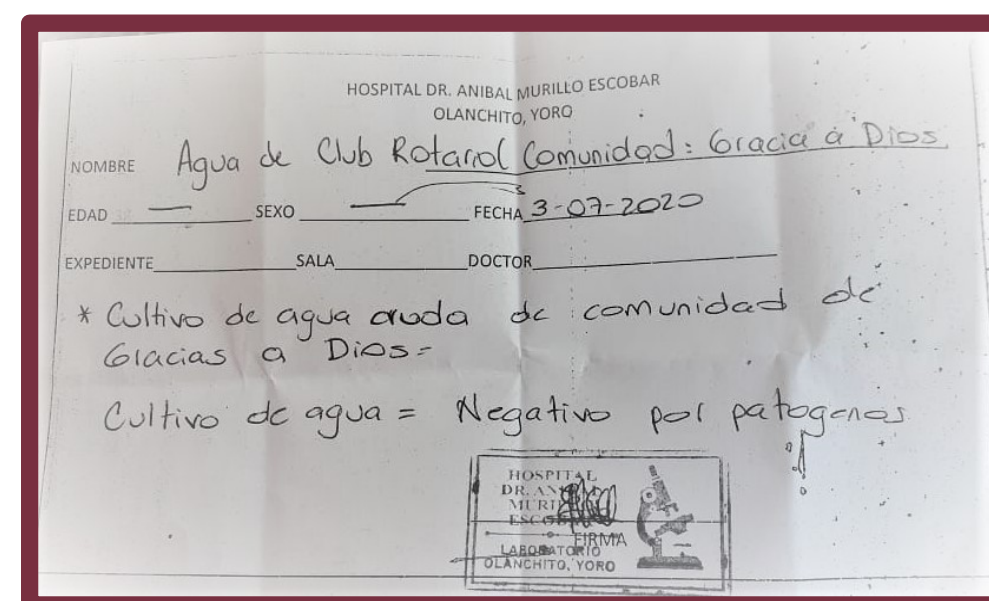
- Assembled a diverse and multi-level research team
- Completed a thorough literature review on diarrheal illness specific to rural Honduras
- Administered a pre-interventional community health needs survey which is currently being analyzed
- Conducted water and geological analysis surveys
- Appointed two Village Health Workers
 - Compiled a VHW training manual and identified Honduran medical doctors to train them
- Partnered with Honduran medical and dental professionals in addition to engineers, professors, and rural village leadership



Results



Measuring fecal coliforms is an indicator of fecal contamination in water supplies that includes *E. Coli* and other potentially pathogenic bacteria. EPA standards mandate that potable water be “less than 1 colony total coliform with *E. coli* absent per 100 mL” and for water to meet guidelines for recreational use it is required to be less than **125 CFU/100mL**. Our water analysis of their primary drinking water shows **62,000 CFU/mL**. Further more, a water sample obtained from the original source of the stream from the top of the mountain showed **0 CFU/mL**. This shows their water supply is being contaminated before reaching the village.



0 CFU/mL from original mountain source



62,000 CFU/mL from primary water source

Teaching Through Collaborative Research

Through the FYAP award, I have been able to create a project that allows for the collaboration of physicians, dentists, medical students, graduate students, undergraduate students, and Honduran medical professionals. This unparalleled opportunity supports and encourages each of these groups to apply their shared passion for global health and unique skill sets to best serve the people of Gracias a Dios, Honduras.



Future Work

In the upcoming weeks, construction of latrines and installation of water filters will be completed. Village Health Workers, in close partnership with the local hospital and medical doctors, will be trained to treat common ailments, survey for and refer chronic illness, and provide monthly health education to the villagers. In partnership with Honduran dentists, toothbrushes, toothpaste and dental hygiene education will be provided and children will receive fluoride varnishes.

We will further administer post-interventional surveys to assess for a reduction in the incidence and prevalence of diarrheal illnesses. In addition, continued support will be provided to the VHW's in the form of salary, medications, medical supplies, and training. We will analyze the collected data and submit our findings for publication. In the future, we will utilize the multidimensional interventions that were proven to be effective and create a model which can be utilized in similar rural and underserved villages in Central and South America to further improve health outcomes.

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