

# SEEKING MUTUAL BENEFIT

A story of how a Christian college, NGO, and business collaborated with a community in Bolivia to significantly reduce childhood diarrhea.

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COLLABORATION

CHALLENGES

## A Serious Problem:

- Nearly half of the children under 5 years of age in peri-urban communities near Cochabamba, Bolivia were reported to have diarrhea at least once a month. The quality of water delivered to homes is severely microbially challenged.

## Aligning Needs and Seeking Collaboration:

- The Sawyer Corporation approached Messiah College to soundly and ethically field test their PointONE™ Filter against water-borne disease in a community with poor water quality.
- A Christian service-learning and outreach partner, Food for the Hungry (FH), was then asked by Messiah any College to conduct a study in a community with which they served.
- Sawyer then granted funds FH Bolivia to hire, assemble and organize, a research team to conduct the study. FH Bolivia utilized their own public health specialist and seconded a Messiah College faculty member in biology (EDL) to codirect the study.

## Producing Results:

- The community-based study was successfully implemented.
- When comparing treatment and control groups, childhood diarrheal prevalence dropped significantly for households that used the PointONE™ Filter.
- Further collaboration was sought and included from Johns Hopkins University faculty in the
- Findings were then published in the American Journal of Tropical Medicine and Hygiene.

## The Sawyer Corporation:

- Funding to pay for personnel and equipment to conduct the study.
- Decision-making input into study design, protocols, data analysis and publication of results.

## Messiah College:

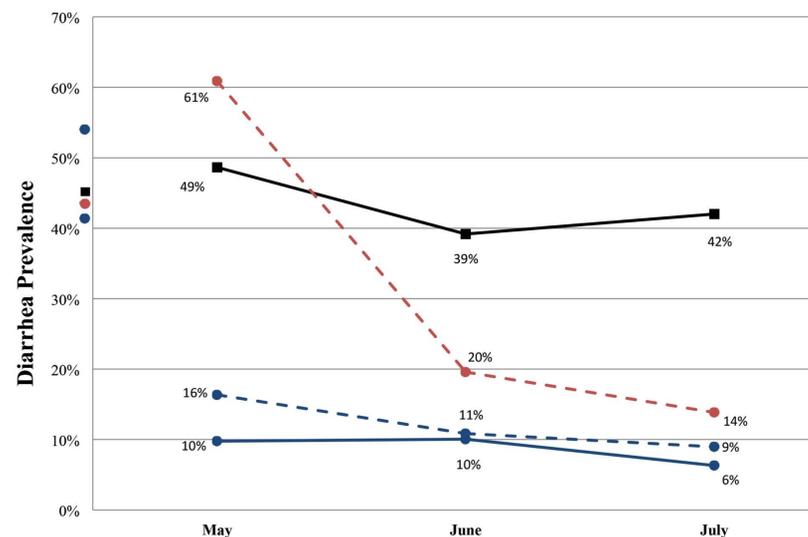
- Funding to pay partial salary to faculty member while on sabbatical leave.
- Loss of faculty member in the teaching pool while on sabbatical leave.

## FH Bolivia:

- Logistical, personnel, and technical support for faculty member and family.



A cluster randomized study was conducted to test the PointONE™ hollow-fiber water filter in peri-urban Cochabamba, Bolivia.



Diarrhea prevalence by study month. Percent prevalence for each study arm is shown above each point. Dashed black line = filter and WASH BCC arm; solid blue = filter arm; dashed red = WASH BCC arm; solid black = control arm; pre-study prevalence given by markers to the left of Y-axis: 54.0%, 40.8%, 44.8%, and 45.2% respectively.

Diarrheal Disease Intervention Effect Estimates		
Study Arm	Diarrhea Prevalence Ratio (95% CI)	P value
Control	-	-
WASH BCC	0.71 (0.59-0.86)	0.0857
Filter	0.21 (0.15-0.30)	0.0286
Filter and WASH BCC	0.27 (0.22-0.34)	0.0286

## Disparate Institutional Systems:

- Ways of carrying out business often varied.
- Since FH Bolivia was the hosting institution, its system of operation took precedence. Messiah College faculty had to invest much time into learning this system, which took considerable time away from the project oversight.
- Messiah College often needed to educate Sawyer and FH Bolivia on how potential conflicts of interest need to be avoided and study protocols had to be honored.

## Planning the Appropriate Amount of Time:

- The cross-culturally differential perception of time posed many issues while in Bolivia. What was planned as a 6 month study, actually was 3-4 months after full analysis. The most significant time difficulty was organizing the project during the set up phase.
- The appropriate expectation of time need for analysis of results and publication was grossly underestimated by Messiah College and FH Bolivia. This was due in large part to not allowing for a reduction in teaching load to free up time for the faculty after the year of sabbatical leave.

## Relational Effort:

- Due to a large number of important players across the three institutions, significant time and effort was necessary to foster positive working relationships, build trust, and communicate effectively across institutions, personnel hierarchies, and national and international cultures.

## Lessons Learned:

- Managing expectations between all parties is key, particularly with respect to culture, time, and expenses.
- An additional post-study collaboration (with Johns Hopkins University) was necessary for insuring unbiased publication, as well as specialized expertise in public health and biostatistics.

## Products and Outcomes:

- We observed reductions in diarrhea in children under 5 years.
- Two research articles were published in the American Journal of Tropical Medicine and Hygiene for the NGO and academic institutions
- Greater product exposure occurred for the Sawyer Corporation among NGOs based in Bolivia.
- Additional research projects were funded and organized through Messiah College and the Sawyer Corporation.

EXPENSES

EXPERIENCE



Lindquist ED, George CM, Perin J, Neiswender de Calani KJ, Norman WR, Davis TJ, Perry H. 2014. A Cluster Randomized Controlled Trial to Reduce Childhood Diarrhea Using Hollow Fiber Water Filter and/or Hygiene-Sanitation Educational Interventions. Am. J. Trop. Med. Hyg., 91(1), 2014, pp. 190-197

