Engineering World Health Summer Institute
Guatemala 2018
Final Report

Engineering World Health CEO:
Leslie J. Calman, PhD
EWH SI Coordinator:
Maddy Bishop-Van Horn
On-the-Ground-Coordinator:
Alyssa Paul
On-the-Ground-Partners:
Do Guatemala -- Petra Post and
Juan Mario Cervantes
Joe Leier

Executive Summary

The 2018 EWH Winter Institute in Guatemala was a highly productive contribution to the Guatemalan health care system. We had 12 participants: 3 male and 9 female, all undergraduates, 3 from George Mason University and 9 from Rochester Institute of Technology.

During the first week of the program, the participants underwent intensive language, cultural, and technical training conducted in Quetzaltenango. The group went on an excursion to a coffee farm and a visit to Lake Atitlan while on the program. After their first week of training, the participants traveled to their hospital placements.

The participants were placed in 3 hospitals throughout Guatemala. Collectively, they repaired 90 pieces of equipment. Equipment ranged in complexity from coffee pots to defibrillators.

Notable, high impact repairs included two surgical lamps that were being repaired as they were being used, a 40 year old centrifuge, and an infant scale repaired minutes before having a baby placed on it.

An employee from one of our hospital placements drove 3 hours to attend the final conference and present the participants with certificates. All of the hospitals expressed their gratitude for the work the participants accomplished in these three short weeks.

In summary, the Guatemala program was highly productive and made a genuine contribution to health care delivery in the hospitals served.

Types of Medical Equipment Repair

The 12 participants repaired or completed preventative maintenance on 90 pieces of medical and hospital equipment, totaling approximately USD $180,000 [1] of equipment repair service.

Repairs/Maintenance by Type of Equipment

Type of Equipment	Total Pieces	Type of Equipment	Total Pieces
Autoclave	4	Microscope	4
Bed, delivery	4	Nebulizer	1
Blood Pressure Device, Manual	2	Operating Table	8
Centrifuge (electric or hand operated)	4	Octoscopes	2
Defibrillator	1	Patient Monitor	3
ECG	1	Phototherapy	9
Electrosurgery Machine	1	Pulse Oximeter	4
Furniture	7	Scale (laboratory and in wards)	7
Incubator (infant)	6	Thermometers	1
Infant Warmer (Radiant or other)	1	Ultrasound machine (imaging)	2
Lamp, surgical	3	Other	15

*User training and/or low voltage and peripherals repairs only

Needs Assessments

Essential to improving healthcare delivery in the developing world is having a deep understanding of the challenges faced in low-resource communities. We ask our participants to be observant throughout their time in the hospital and to identify some of the greatest needs. Participants conduct interviews with hospital staff to learn about the problem through the lens of various hospital branches (i.e. clinical staff, BMETs, health system leadership), then propose a solution to this problem. These interviews provide a snapshot of specific needs in low resource hospitals. Some of these needs may become incorporated into the projects that matter list.

The 2017 SI participants completed 7 interviews in 5 hospitals. Based on these interviews, the following are some of the most needed items:

Individualized nebulizer system
More EKG paper, or a machine with inexpensive EKG paper
Water control system to prevent flooding in heavy rains
Manuals or systems to assist BMETs in knowing equipment's faults when it is delivered
Supplies for treating burns (gauze or fabric)
X-ray printer
X-ray radiation protection

---

[1] EWH estimates the mean value of each repair at USD$2000