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Campus to Country Program **Guatemala 2023** Final Report

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EXECUTIVE SUMMARY

EWH's January 2023 Guatemala Campus to Country Program with Rochester Institute of Technology was highly productive.

After completing a training course at RIT, eleven undergraduate students traveled to Guatemala for a three-week Institute. They completed orientation and language training before moving to their hospital placements to serve as volunteer biomedical equipment technicians in small groups around the country.



Zack, Neil, and Julia returning an infant warmer to the pediatric ward

During their two weeks of hospital work, participants completed an estimated \$144,000 worth of service and repairs. A total of 72 pieces of equipment were returned to service across four different partner hospitals.

In addition to medical equipment, at the request of hospital staff participants repaired a number of items not related to patient care, but nevertheless critical to the functioning of the hospital, including multiple computers, a copier, an electric stove, and other kitchen equipment such as blenders and milk pasteurizers.

The group participated in a full-day excursion to learn about Guatemalan culture, history, and geography which included a hike to Santiaguito, an active volcano, as well as tours of the historical center of Quetzaltenango (Xela) and an indigenous village, Salcajá.

The Institute concluded with a final conference in Xela, during which each team gave a presentation about what they encountered in their placement hospitals, notable repairs, and their overall experience.

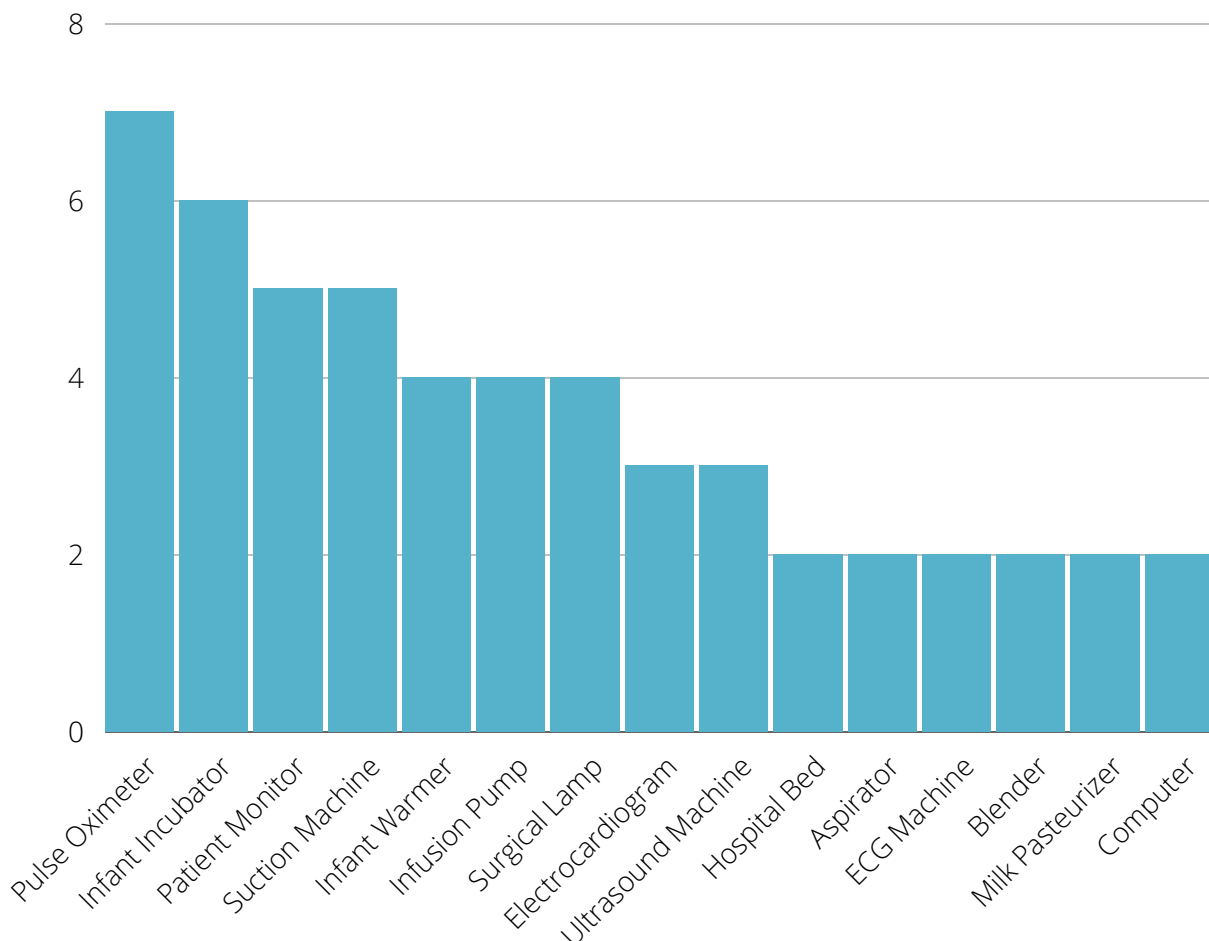
MEDICAL EQUIPMENT REPAIR

Participants were able to repair 72 of the 103 pieces of equipment that they encountered, for an impressive success rate of 70%. Each team completes a Work Summary Form during their time in the hospital to document the pieces of equipment they encounter, the reason the piece of equipment is broken (e.g, power supply issue, blown fuse, etc), and if the repair is successful. The most common barriers to repair are lack of parts and those which require more advanced knowledge. Their work, as documented in the Work Summary Forms, is summarized below.



Sadie and Braulio working on an ECG Machine

Repairs/Maintenance by Type of Equipment - Top 15



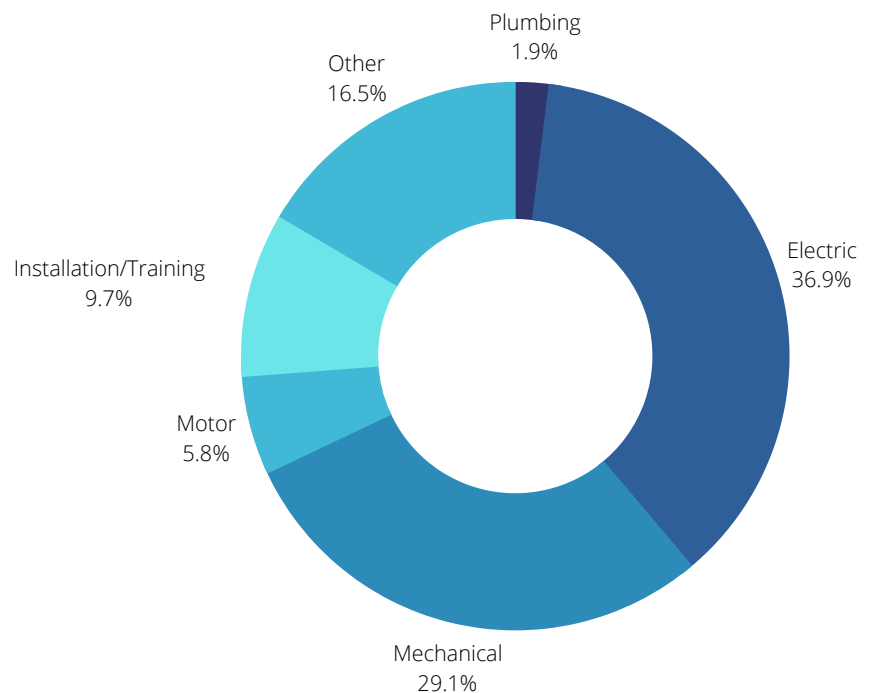
MEDICAL EQUIPMENT REPAIR

Pulse oximeters, infant incubators, patient monitors, suction machines, infant warmers, and infusion pumps were among the most common pieces of equipment repaired.

Mechanical and electrical problems accounted for the majority of issues encountered.

At the request of hospital staff, students also worked on important kitchen appliances, including a breast milk pasteurizer critical to supporting babies in the maternity ward.

Repairs/Maintenance by Type of Repair



Sammy, Daniel, and Ben getting ready to train staff on how to correctly use infusion pumps

Going in, I was nervous that I wouldn't be able to fix anything. When I got there and started fixing things, it improved my confidence in my skills.

SECONDARY PROJECTS

During EWH Institutes, teams are encouraged to complete secondary projects for their hospitals if time allows. Through interviews with hospital staff, participants identify a need in the hospital and are given a budget of \$100 per person to use in a creative way to provide for that need. One secondary project was completed during this year's program.

At Isabella and Celina's placement hospital, the pediatric nurses were using two desks pushed together as an infant changing table. As the desks were different heights, using the table was uncomfortable for both the nurses and babies.

They decided to solve this problem by building a custom table with a water-resistant mattress to fit perfectly in the space and provide a more comfortable, sanitary diaper changing station to meet the nurses' needs.



Isabella and Celina with their new infant changing table

With the help of the hospital's maintenance staff, Isabella and Celina measured the existing "table" and purchased lumber from a local shop. Together, they cut pieces to create three sturdy legs, a worktop, and a storage shelf, then sanded and painted the entire piece before placing the new nylon mattress on top and returning it to the pediatric ward where it was well received by the nurses!



PARTICIPANT DEBRIEFS AND FEEDBACK

Overall, participants enjoyed the 2023 Campus to Country program in Guatemala, and felt that the experience greatly improved their confidence in their engineering skills.

They described the program as "exciting," "fulfilling," and "uncomfortable - in a good way." Many participants noted that being immersed in a new culture and gaining experience in a clinical setting were the most valuable parts of the trip.



The whole group with OTGCs Bob and Zach at the final conference in Xela

Before the program, many participants lacked confidence that they would be able to repair equipment, but once they arrived and started working, they found that they were able to make meaningful contributions to their placement hospitals. One participant remarked, "**I was apprehensive about my limited engineering background coming into the trip, but the actual repairs we made were often not extremely difficult.**" There would usually be only one issue with each piece of equipment, and it was just a matter of finding the right parts once a diagnosis was made."

The Guatemala program staff were reviewed very positively, with participants indicating that their On-the-Ground-Coordinators were very helpful and knowledgeable. They thoroughly enjoyed the homestay experience and getting to know people in their host communities.

Participants felt challenged by the language barrier and the short amount of time they had in-country, but despite these obstacles, they found the experience rewarding. One student said, "This program really forced me to get out of my comfort zone. It was my first time doing something like this and I was really nervous in the weeks leading up to the program. **I ended up loving it and I am so grateful for the experience.**"

EWB would like to thank all of the students, coordinators, instructors, partners, and donors who helped make this program possible!