



engineeringworldhealth

Winter Institute
Guatemala 2024
Final Report

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EXECUTIVE SUMMARY

EWH's 2024 Winter Institute with Rochester Institute of Technology was highly productive and enjoyed by participants.

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



James, Curran, and Sebastian with staff at their placement hospital

During their two weeks of hospital work, participants completed an estimated \$158,000 worth of service and repairs. A total of 79 pieces of equipment were returned to service across three different partner hospitals.

Outside of their hospital work, the group participated in a full-day excursion to learn about Guatemalan culture, history, and geography which included a hike to view 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.

Overall my experience was good and I learned a lot which I will take with me for the rest of my life.

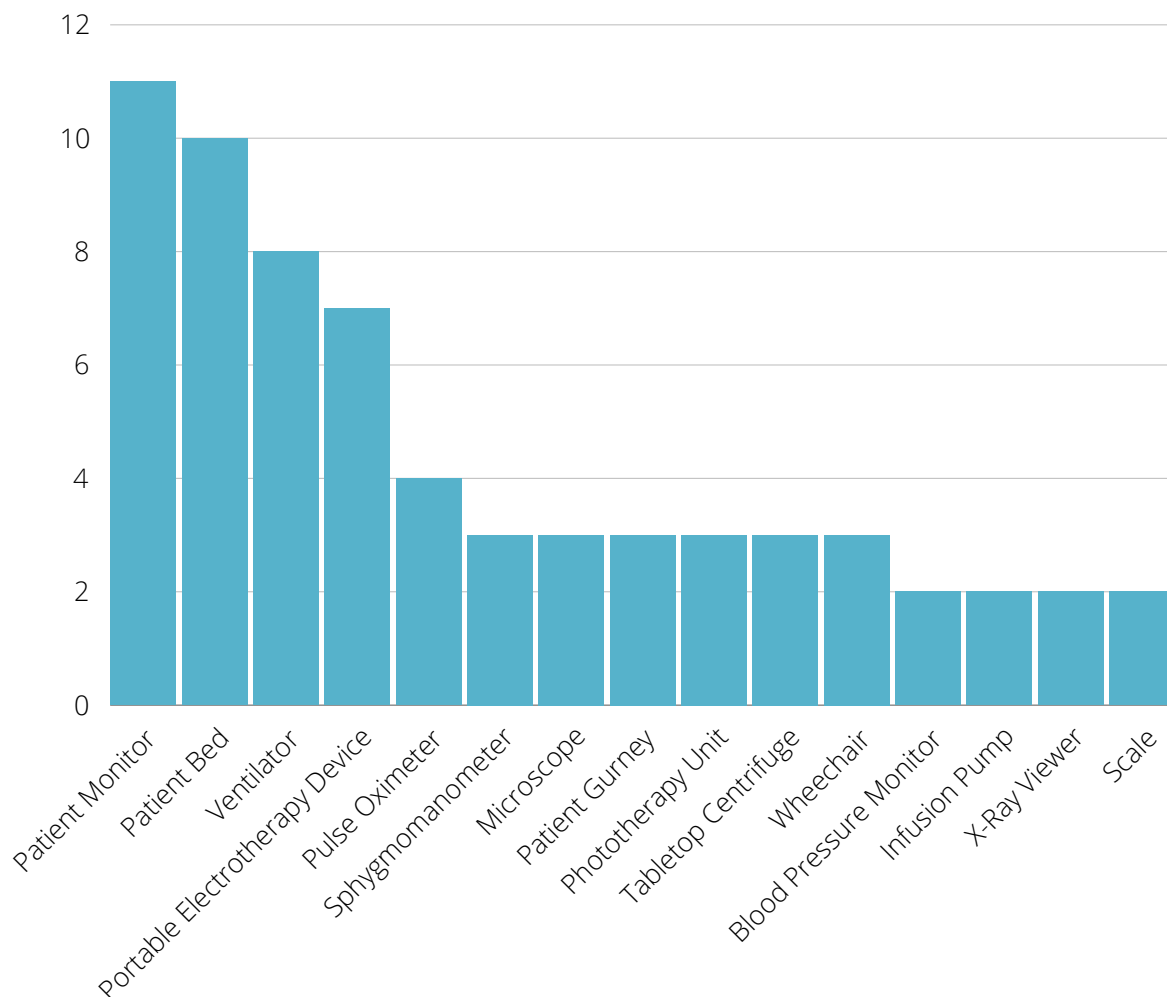
MEDICAL EQUIPMENT REPAIR

Participants were able to repair 79 of the 95 pieces of equipment that they encountered, for a very impressive success rate of 83%. 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.



Diego and Rivka working

Repairs/Maintenance by Type of Equipment - Top 15



MEDICAL EQUIPMENT REPAIR

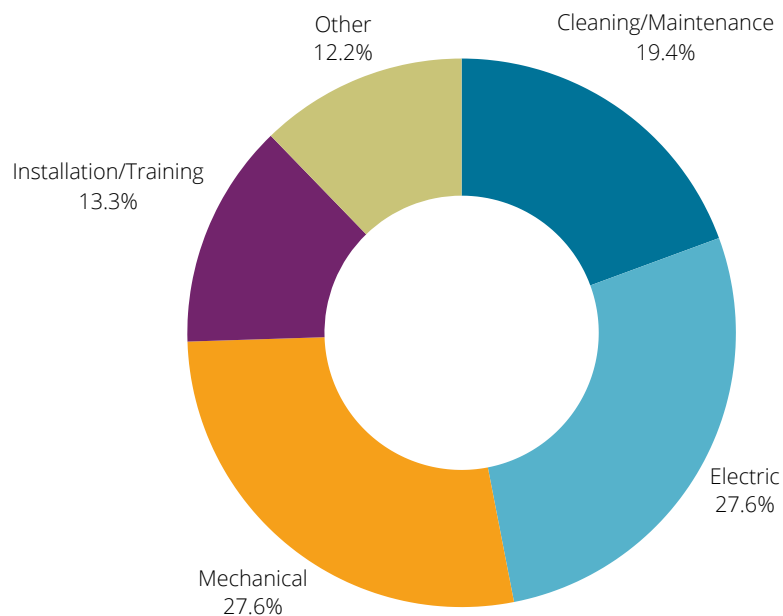
Patient monitors, patient beds, and ventilators were among the most common pieces of equipment repaired.

Simple electric and mechanical problems accounted for the majority of issues encountered.

Participants found that gaining trust with hospital staff was critical to gaining access to sensitive areas of the hospital to repair equipment, such as a the operating room.

“[Our] hospital had two sort-of working operating tables, one of which was sitting in the hallway outside the OR, unused. One bed had a great top part, but a poorly functioning piston. The other had a hard-to-maneuver top part, but a piston in great shape. After several days of struggling to schedule a time to get into the OR, we switched the two halves so that there was at least one bed that functioned fully!”

Repairs/Maintenance by Type of Repair



The most valuable part for me was seeing the challenges in healthcare on a global scale.



Kelly, Sarah, Jolie, and Christian in the OR



Curran working on an x-ray viewer



Veronica working on a microwave

PARTICIPANT DEBRIEFS AND FEEDBACK

Overall, participants enjoyed the 2024 Winter Institute in Guatemala, and were surprised at the amount of work they were able to do in such a short amount of time.

They described the program as "challenging," "enlightening," and "fun." Many participants noted that gaining hands-on experience with equipment and honing their technical skills were the most valuable parts of the trip.



The group during a hike on Santa Maria volcano

The 2024 Winter Institute participants came from a diverse range of academic backgrounds; the group included Physics, Biomedical Sciences, and Computer Engineering majors in addition to Biomedical and Mechanical Engineering majors. One student remarked, **"I'm not an engineering major so actually fixing devices was a big accomplishment for me. My favorite fix was our first electric bed because it was a huge project and it took a lot of teamwork to troubleshoot and assemble and disassemble. It felt great to see it finally work in the end."**

The Guatemala program staff were reviewed very positively, with participants indicating that their On-the-Ground-Coordinators were very helpful and approachable. 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 to work on longer-term projects, but despite these obstacles, they found the experience rewarding and felt that they gained confidence in their skills as well as a changed perspective. One student said, **"Professionally, I have grown so much more confident in my technical abilities as well as just trying something even if I don't know exactly what to do. I also have gained a new perspective on the values of life and materialistic things."**

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