engineeringworldhealth

Summer Institute
Nepal 2022
Final Report

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EXECUTIVE SUMMARY

EWH's 2022 Nepal Summer Institute was our fifth Institute in Nepal, and the first after a two-year hiatus due to the COVID-19 pandemic.

After completing a training course at Denmark Technical University, thirteen undergraduate students and recent graduates traveled to Nepal for a 6-week Institute. They completed language and technical training and then served as volunteer biomedical equipment technicians in small groups at hospitals around the country.

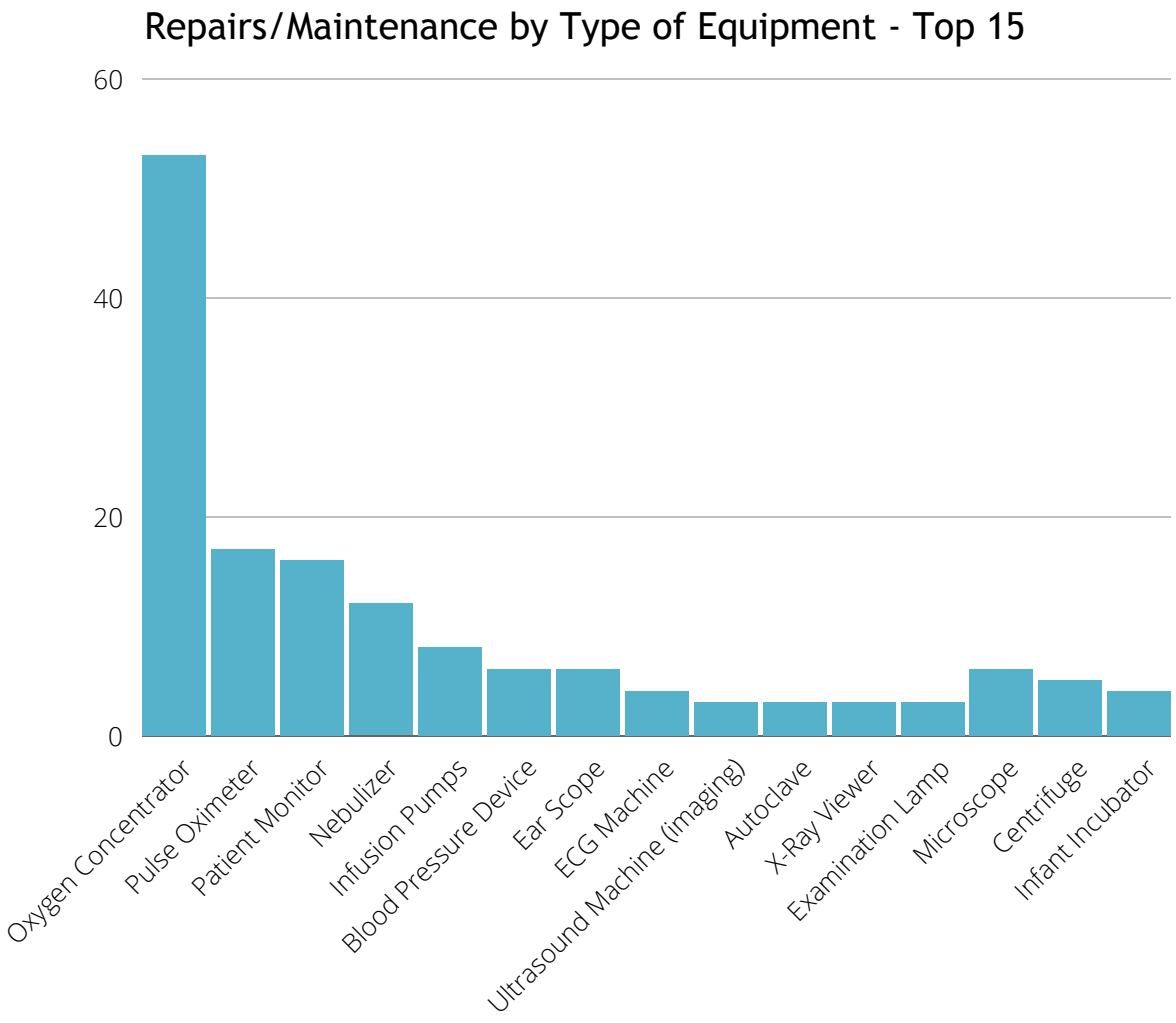
During their five weeks of hospital work, participants completed an estimated $338,000 worth of service and repairs. A total of 169 pieces of equipment were returned to service across six different partner hospitals, including Damauli District Government Hospital, Bandipur Hospital, Dhading District Hospital, Hetauda Hospital, Okhaldhunga Community Hospital, and Trishuli Hospital.

In addition to medical equipment repairs, participants completed a total of seven secondary projects ranging from building hand sanitizer stations to training hospital staff on x-ray safety. They participated in group excursions, including including a trip to the town of Pokhara. The group visited Mehendra Cave, Gandaki River Gorge, Devi's Fall, and rode the Sarangkot cable cars.

The Institute concluded with a Final Conference in Kathmandu, during which each team gave a presentation about what they encountered in their placement hospitals, notable repairs, and the overall experience.

MEDICAL EQUIPMENT REPAIR

Participants were able to repair 169 of the 221 pieces of equipment that they encountered, for an impressive success rate of 76%. 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 taken from the Work Summary Forms, is summarized below.

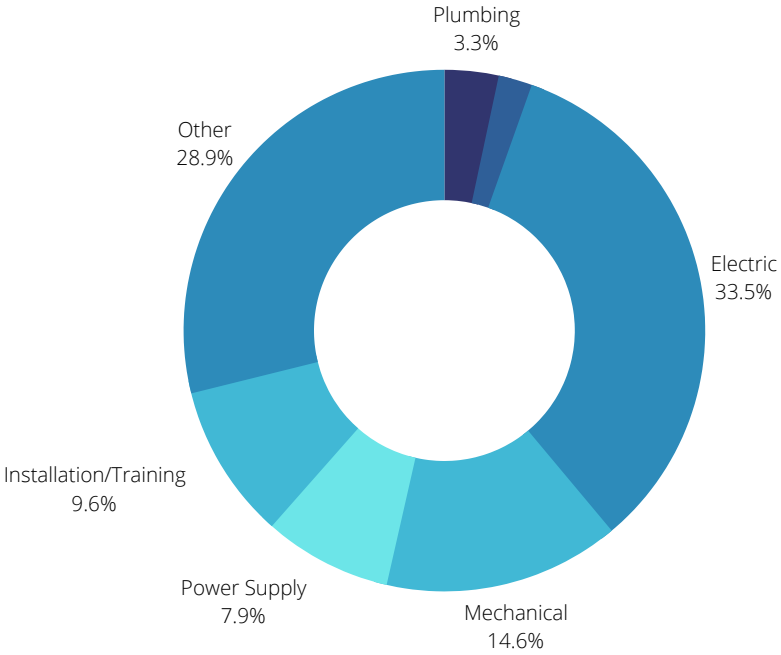


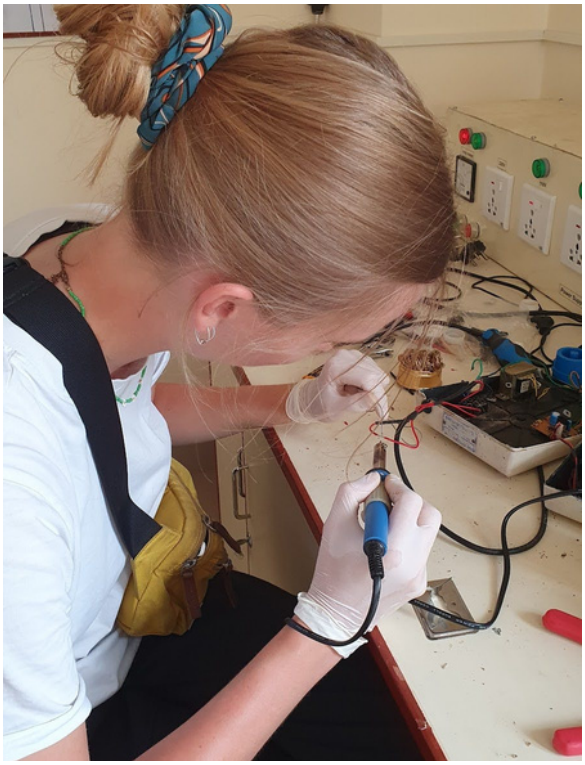
MEDICAL EQUIPMENT REPAIR

Oxygen concentrators, pulse oximeters, patient monitors, nebulizers, and infusion pumps were among the most common repairs made during the 2022 Nepal Summer Institute.

Notable high-impact repairs included 53 oxygen concentrators, a centrifuge, and a defibrillator.

Repairs/Maintenance by Type of Repair





My favorite experience was hearing the doctors telling us how great it was to have us there, and how they thought we had done an amazing job.

SECONDARY PROJECTS

Each team is encouraged to complete a secondary project for their hospital during their placement. Through interviews with hospital staff, the 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. The 2022 Nepal participants completed a total of seven secondary projects, detailed below.

Hospital 1

Mark and Fernando were told hospital staff that the pediatric ward was "high priority" for a secondary project. Although it makes up one of the hospital's primary departments, due to lack of maintenance over the years, it had deteriorated and no longer provided a comforting atmosphere for children and their families. To make the space more inviting and solve some humidity issues that the nurses pointed out, they gave the ward a new coat of paint. Despite the fact that this was not a very technical project, the staff absolutely loved the result and were very grateful to the team for their work.

Painting the pediatric ward

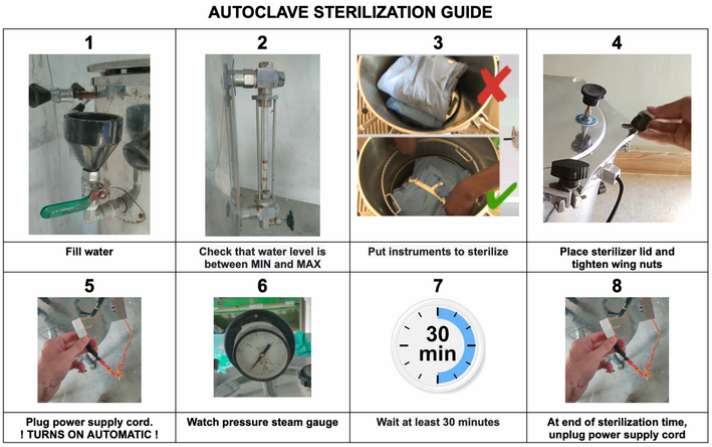
In addition to painting, Mark and Fernando used the rest of their funds to make wall-mounted hand sanitizer stations and purchase toys for the pediatric ward.

Hospital 2

Asta, Elizabeth, and Vera noticed that there were few opportunities for patients to practice good hand hygeine at their hospital. Because the hospital was going to be moving buildings, they decided to make portable hand sanitizer stations from disused IV poles. They also made a poster, which they got translated to Nepali, printed and laminated, and attached to the stands.

SECONDARY PROJECTS

Hospital 3

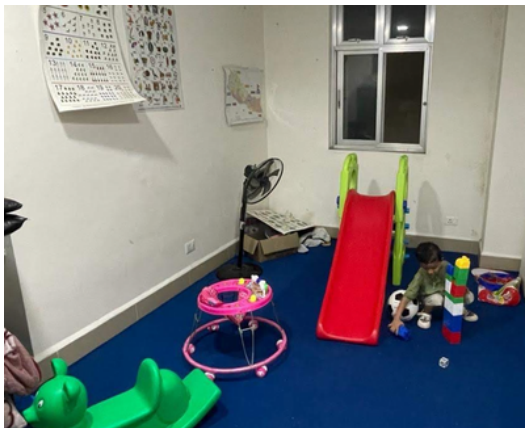


Jannik, Gaia, and Manuel noticed that there was a large amount of equipment at Hospital 3 that was functioning, but being used incorrectly or stored away because it came without instructions. They decided to create Quick Guides and Maintenance Guides for the most needed devices, including oxygen concentrators, vertical autoclaves, and infusion pumps.

They printed the guides as stickers and applied them on the wall in the room where the devices were used or directly on the device cover. While going around the hospital, they also noticed that the pediatric ward was not welcoming for the young patients, and after consulting with the nurses, they provided them with new slippers, redecorated the room, and provided toys for the patients.

Hospital 4

Arlene, Parcon, and Lena made a playroom for the children in the general ward. They bought a slide, a rocking horse and big building bricks.



Hospital 5

Anubhav, Robert, and Arthur observed that there was a lack of any x-ray protection for the dental x-ray at Hospital 5.

Some staff were unaware of the safety hazards, and other had concerns about not having access to patient protection such as lead aprons and thyroid collars. To help alleviate this issue, they incorporated a short course on x-ray safety in their final presentation, and bought a led apron and thyroid collar for the dental x-ray. They hope with this new awareness of the safety issues, the hospital will prioritize x-ray protection when buying new equipment in the future.

PARTICIPANT DEBRIEFS AND FEEDBACK

Overall, participants enjoyed the 2022 Nepal Summer Institute, and felt that the experience benefitted them both personally and professionally.

They felt that the labs and lecture prepared them well for hospital work, and found the language and culture training useful.

The Nepal program staff were reviewed very positively, with participants indicating that their instructor and coordinators were very helpful. They enjoyed interacting with and working alongside local hospital staff, as it allowed them to feel connected to Nepali culture.

Participants felt challenged by adjusting to a new, very different culture, and found themselves having to think creatively as engineering due to lack of access to resources that they would normally have, such as spare parts. Despite these obstacles, they found the experience very rewarding. One student remarked, "All of this has been challenging in a good way." Another said, **"I love how this experience has helped me to grow in every possible way."**

Overall, participants felt that they were able to make a significant positive impact on their hospitals. One participant said, "We had a lot of broken equipment in the workshop when we arrived, and a lot came in during our time there. By the end of the program we had managed to look at, and attempt fixing, every piece. That felt great, and I would call it our biggest accomplishment."

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