

TriMedx Biomedical Engineering Trip Report Microscope Repair and Maintenance Sucre, Cochabamba, and Santa Cruz, Bolivia February 6-10, 2023

I. Introduction

Without functioning biomedical equipment and the workforce to maintain it, health systems are unable to provide effective care of the populations they serve. This was the impetus for the Biomedical Engineering trip to Bolivia organized in partnership with the TRIMEDX Foundation. The focus of the trip was to repair and provide in-service training in the use and maintenance of previously donated surgical microscopes and other equipment.

II. Goals

- a. Repair and maintain donated surgical microscopes and other medical equipment at three Bolivian public hospitals
 - b. Provide microscope maintenance training to Bolivian health workers and technicians
 - c. Engage U.S. biomedical partners in partnerships with Bolivian hospitals
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III. Summary of Activities

- a. Repair and maintain donated surgical microscopes and other medical equipment at three Bolivian public hospitals, and
- b. Provide microscope maintenance training to Bolivian health workers and technicians



Biomedical engineers Nathan Gibson (Prescott's Inc. Microscopes) and Kevin Collazo (TRIMEDX Foundation) traveled with Bolivian team members, José Choque (Puente de Solidaridad) and Francisco Decker (biomedical engineering graduate and interpreter) to three public hospitals in Sucre and Santa Cruz. Nathan helped to complete the setup of a neurosurgical microscope donated by Prescott at the Santa Bárbara Hospital in Sucre. While he was balancing and fine-tuning the neurosurgical microscope, he provided an in-service to the hospital's neurosurgeons, nurses, and technicians who will be responsible for maintaining the microscope going forward.

Nathan also repaired an ophthalmology microscope donated by Solidarity Bridge that was used for surgery. Nathan had the opportunity to attend the surgery to answer any questions the surgeon had while using the microscope. Additionally, Kevin had the opportunity to work with the anesthesia staff and complete maintenance on all the patient monitors in the surgical suites as well as the recovery beds. Kevin also repaired a monitor that was not being used because the touchscreen was not working.

In Santa Cruz, the team visited the Children's Hospital and the Hospital San Juan de Dios. At these sites, Nathan and Kevin had the opportunity to work on one neurosurgical microscope plus two research/training microscopes. Kevin tested defibrillators and provided an in-service with the staff.

c. Engage U.S. biomedical partners in partnerships with Bolivian hospitals

This trip was a great example of how to leverage institutional partnerships to further our mission in collaboration with our Bolivian partners to strengthen the surgical systems that serve Bolivian patients.

We are continually grateful for the wonderful work of the TRIMEDX Foundation and for the new partnership with Prescott's Microscopes. Both organizations have been generous and outstanding partners.

IV. Impact Story

The Solidarity Bridge Neurosurgery and Neurology Institute has been working for several years now to equip the Neurosurgery service at the Hospital Santa Bárbara with a functioning surgical microscope. Prescott's Microscopes, Inc. was generous in both attempting to fix a previously donated microscope and then donating a newly refurbished operating microscope. Solidarity Bridge sent this refurbished microscope via ocean freight to Bolivia in the fall of 2022. The microscope finally made it to its new home in Sucre at the beginning of 2023, just before the biomedical team arrived. Having a functioning operating microscope will have a profound impact on the types of neurosurgical cases the neurosurgery service will now be able to treat and the quality of the surgeries they will be able to provide for patients in crisis. This also provides a great foundation for our continued partnership with the Hospital Santa Bárbara in mentored surgical training. We are grateful to ALL the many actors who made this possible.

It was also very meaningful to have Francisco Decker join the biomedical team. Francisco is a recent graduate from the biomedical engineering program at the Universidad del Valle in Cochabamba. Biomedical engineering is a fairly new field of undergraduate study in Bolivia, making Francisco a graduate of one of the first cohorts of biomedical engineers trained in Bolivia. Solidarity Bridge is excited to contribute to this growing field in Bolivia with the hope that in the near future, Bolivia will have a biomedical workforce with all the skills needed to support the surgical systems for Bolivian patients.

V. Future Outlook

- The TRIMEDX Foundation has offered to provide virtual training in 2023.
- They would be interested in scheduling another trip in 2024.
- TRIMEDX has also offered equipping support for the 2023 Bolivia container.
- Prescott's Inc. Microscopes also expressed an interest in continuing this partnership.

VI. Acknowledgements

Solidarity Bridge is grateful for all who made this trip possible, including the following and the many unnamed others who together made this trip possible.

Nate Gibson, Prescott's Inc Microscopes
Kevin Collazo, TRIMEDX Foundation

Puente de Solidaridad

Jose Choque (Team leader)
Francisco Decker (Translator)
Desire Mendez Vasques (Supplies Coordinator, Santa Cruz)

Hospital Santa Bárbara, Sucre

Dr. David Gardeazabal, Neurosurgeon
Dr. David Perez
Dr. David Junior, Ophthalmology Surgeon
Maribel Garcia Lopez, Nurse
Carmen Julia Zarate, Nurse
Dr. Abel Chuquimia, Anesthesia Resident
Rodrigo Paniagua, Technician

Hospital del Niños, Santa Cruz

Dr. Jose Cuiza, Director
Dr. Feliz Pacheco, Neurosurgeon
Jorge Lima, Biomedical Engineer

Hospital San Juan de Dios

Dr. Fernando Capobianco, Neurosurgeon
Dr. Edgar Carrasco, Neurosurgeon
Dra. Karin Aponte, Neurosurgeon
Dr. Amet Gutierrez, Neurosurgeon
Carlos Valdez, Biomedical Engineer
Erenesto Jimenez, Biomedical Engineer