



# Neurosurgery & Neurology Institute

A PROGRAM OF SOLIDARITYBRIDGE



## Neurosurgery Mission Trip

Asunción, Paraguay

April 19-23, 2022

### I. Introduction

This report summarizes the activities of the April 2022 Neurosurgery and Neurology Institute (NNI) trip to Asunción Paraguay. The trip was planned in collaboration with the Paraguayan Neurosurgical Society, the Neurosurgery Service of the Hospital Nacional de Itauguá (HNI), and the Archdiocese of Asunción. The U.S. team consisted of neuro anesthesiologist Dr. Deepak Sharma, neurosurgeon Dr. Richard Moser, and Solidarity Bridge staff Maria Eugenia Brockmann and Lindsay Doucette.

### II. Trip Goals

- Provide training in management of cerebrovascular disease
- Provide training in neuro anesthesia
- Initiate microsurgery training laboratory at the Catholic University of Asunción
- Strengthening partnerships with HNI and the Archdiocese of Asunción
- Meet with the Ministry of Health to discuss national plans for stroke response and including funding for surgery in national health plans
- Meet with the Children's Hospital of Acosta Ñu to develop partnership for epilepsy surgery

### III. Meeting our Goals

#### a. Cerebrovascular Disease Management

Our Paraguayan neurosurgical partner, Dr. José Kuzli, identified the need for training in management of ischemic stroke, including advances in endovascular treatment. Dr. Kuzli also expressed a need for training in the surgical management of arteriovenous malformations (AVMs).

The original plan was to offer a theoretical course on the management of ischemic stroke, including mechanical and endovascular thrombectomy treatments, and prehospitalary, E.R., and ICU stroke management. There was also a plan for 5 AVM surgeries for patients from the HNI as well as the Social Security (IPS) Hospital in Asunción.

It was decided to postpone the theoretical course until later in 2022. The AVM surgeries were reviewed and discussed through multiple virtual meetings prior to travel, but the cerebral vascular surgeon tested positive for COVID on the day of travel. These surgeries would need to be postponed until the earliest possible date that a cerebral vascular surgeon and a neuro anesthesiologist would be able to reschedule travel to Paraguay.

#### b. Neuro Anesthesia

With this last-minute change in plans, the focus for the week shifted to emphasizing training in neuro anesthesia. Dr. Deepak Sharma, a neuro anesthesiologist from the University of Washington, did an excellent job of training anesthesiologists and residents during two neurosurgeries. Dr. Sharma encouraged greater communication between the neurosurgeons and anesthesiologists to anticipate needs during surgery. He expertly demonstrated how to deliver anesthesia during surgery in such a way as to create optimal conditions for neurosurgery. There was great excitement in the operating room from both the neurosurgeons and anesthesiologists to see the brain “relaxed” and coated in cerebral spinal fluid which helps the neurosurgeons to operate effectively. In the week following these mission surgeries, Dr. Kuzli was happy to report that the anesthesiologists had internalized the training and were demonstrating greatly improved outcomes.

The HNI director of anesthesia, Dr. Myriam Alguilar, made it possible for Dr. Sharma to deliver a lecture to anesthesia residents at the HNI that was simultaneously live streamed to a second audience on a separate campus. The director of anesthesia was very happy with Dr. Sharma’s instruction and there is a clear desire for ongoing training in this area. Dr. Sharma expressed his long-term commitment and desire for sustainable impact in neuro anesthesia training in Paraguay. There is also a great interest for Dr. Sharma to provide training in the use of a transcranial doppler (TCD) ultrasound to detect problems related to brain blood flow. Dr. Sharma is committed to providing future training in the administration of TCD. Dr. Kuzli has also expressed interest in having a neuro anesthesiologist come and stay for multiple weeks to provide more intensive training.

This trip provided an opportunity for Dr. Sharma to assess the need for training and development in the area of neuro anesthesia. He determined that the level of anesthesia care at the HNI was not sufficient for complex cases, like AVM surgeries. Dr. Sharma determined it would be necessary to send a trained neuro anesthesiologist along with Dr. Patel for the rescheduled AVM surgeries. Fortunately, Dr. Sharma’s visit seems to have been successful in generating interest among anesthesia residents and

attendings in learning more about this subspecialty. There are structural challenges related to the frequency of rotation and compensation of anesthesiologists, but there seemed to be interest in ongoing training in this area which will ultimately lead to better patient outcomes.

c. Microsurgery Training Laboratory

Another primary goal of this mission trip was to deliver equipment and sign an official agreement for the establishment of the country's first micro-surgical training laboratory. For months prior to the trip, the NNI team of Solidarity Bridge worked in collaboration with Dr. Abdullah Keles from the Baskaya Neurosurgery Skills Laboratory of the University of Wisconsin to procure the essential equipment and supplies for the laboratory. Through this partnership, the NNI successfully delivered 2 Zeiss Opmi operating microscopes, 4 stereo microscopes, and microsurgical instruments and supplies to equip 4 microsurgical training stations for residents and medical students from various disciplines. This laboratory will be housed at the Catholic University of Asunción with oversight from the medical school as well as the Paraguayan Neurosurgical Society.

During the mission week, the NNI signed a formal, tri-partite agreement with the Catholic University and the Paraguayan Neurosurgical Society for the establishment of this laboratory. At the end of the week, Dr. Kuzli formally thanked Dr. Richard Moser and Solidarity Bridge for helping him make his dream of a micro-surgical training laboratory become a reality. As he addressed the audience of neurosurgical residents and young doctors from multiple hospitals in Asunción, he shared "We dedicate this laboratory to you to train. This is not for me, but for you. We had this idea for many years but didn't know how to complete it because it is very difficult to access surgical microscopes in a low-income country like Paraguay." Dr. Kuzli had the foresight to see the role that Solidarity Bridge could play in helping to equip a surgical skills training laboratory for the next generation of neurosurgeons in Paraguay.

There is still work to be done in terms of the ongoing equipping of the laboratory and assistance in the development of curriculum. However, Dr. Kuzli informed us that plans are already underway for the laboratory's first course with a visiting neurosurgeon from Argentina. Solidarity Bridge will continue to work on delivering microscopes with video functionality and other supplies for the further development of the laboratory and will contribute to future courses as well.

d. Strengthening Partnerships

This trip also provided opportunities to strengthen ongoing partnerships with the Paraguayan Neurosurgical Society, the HNI, and the Archdiocese of Asunción.

First, we celebrated the dedication of a "Solidarity Bridge" operating room at the HNI. This operating room was fully equipped through equipment donations from Solidarity Bridge and was made possible through collaboration with Dr. Patricia Sobarzo and Dr. José Kuzli from the Itauguá hospital. The Paraguayan Ministry of Health supported the project by covering the cost of the shipping container that delivered the O.R. supplies. The operating room was equipped as a space for surgeries for Covid-19 positive patients. The hospital informed us that having this additional operating room has helped to alleviate bottlenecks with surgical cases, facilitating timely surgical intervention. The "Solidarity Bridge Operating Room" has served over 200 patients since December of 2020. It was an honor for Solidarity Bridge staff to see the physical space that we helped equip. It is also a reminder that we will continue to have a role in its ongoing equipping and maintenance.

The Paraguayan Neurosurgical Society hosted a dinner for the visiting NNI team, demonstrating their great hospitality and the evident closeness of this group of neurosurgeons. The vast majority of neurosurgeons in Paraguay work in the city of Asunción with overlapping shifts at the public hospitals offering neurosurgery. For those neurosurgeons working in the public sector, there is a sense of comradery and a desire to work together to improve neurosurgery in the country. At the closing gathering, Dr. Kuzli shared “The Paraguayan Neurosurgical Society recognizes all those who contribute their services to the Paraguayan society in general or to enhancing neurosurgery in Paraguay as honorary members. For this reason, the Paraguayan Neurosurgical Society decided to name Dr. Richard Moser as an honorary international member.” He presented Dr. Moser with a plaque recognizing his honorary membership in the Paraguayan Neurosurgical Society.

During the trip, the NNI team also had the opportunity to spend time with Archbishop Adalberto Martínez Flores, archbishop of Asunción, as well as other representatives of the archdiocese of Asunción. Bernardo Figueroa, director of Pastoral Social outreach for the archdiocese of Asunción, gave us a tour of the diocesan “Social Pharmacy” that was inaugurated in June 2021 to provide free medications to those in need in the diocese. The pharmacy operates out of a reconditioned shipping container that is located on the seminary grounds in the heart of Asunción. Through connections related to the pharmacy, Bernardo was able to procure highly valuable aneurysm clips to benefit neurosurgical patients of the HNI. The NNI will continue to look for ways to support the Pastoral Social work in the diocese and to further develop this partnership.

e. Ministry of Health

The NNI also met with representatives of the Paraguayan Ministry of Health to advocate for the establishment of a National Stroke Center in Paraguay at the HNI. Before our arrival, there were preliminary announcements from the Ministry of Health that the HNI would be named as a National Stroke Center. The NNI sought to further advocate for this becoming a reality and offered to play a role in this ambitious project.

The NNI recognizes the vast disparities between high income countries and LMICs when it comes to the resources needed for acute stroke management. To restore health and well-being, proper stroke care requires prompt action over the spectrum of care from early identification and transportation to rapid diagnosis and intervention.

A Stroke Program requires provider and patient education on stroke awareness and the need to respond quickly to offer the possibility of restoring blood flow in the brain. A transportation system must bring patients directly to the Stroke Center where emergency imaging will determine the nature of the problem and the possibility for stroke intervention. The equipment, training and devices need to be in place for immediate use. Stroke neurology, neuro-anesthesia, neurosurgery, interventional neuroradiology and neuro-critical care are part of the multi-disciplinary team that makes stroke intervention and restoration of neurological function possible.

Meetings were held with Minister of Health, Dr. Julio Borba, Director of International Relations for the MoH, Cecilia Irazusta, and Chief of Staff of the Vice Ministry of Social Welfare, Dr. Pablo Zapattini. At the end of the meeting with Dr. Borba, it was agreed to create a shared agreement with the Ministry of Health to begin collaborative efforts for the development of a national stroke center. The NNI will need

to move quickly to maintain momentum on this project during the remaining year of governance of the present administration.

f. Children's Hospital Acosta Ñu

The NNI team were also invited to visit the Children's Hospital of Acosta Ñu, the only public pediatric hospital in Paraguay to make plans for future training in pediatric epilepsy surgery. We met with hospital director, Dr. Pío Alfieri, as well as director of neurosurgery, Dr. Diego Servián. The hospital is well-equipped with all of the necessary equipment for epilepsy diagnosis and surgical interventions. It was agreed that the NNI would first send a delegation of pediatric neurologists to work with the hospital's neurology team to identify cases that would be appropriate candidates for epilepsy surgery. This would be followed by a pediatric neurosurgery team to provide training in epilepsy surgery. Next steps for the NNI will be to convene a team of pediatric neurologists to begin virtual communications with the hospital's neurology service and continue with in-person consultations in the coming year.

#### **IV. Patients Served**

During the mission week, Dr. Sharma assisted in surgeries for two aneurysm patients.

The first patient was a 59-year-old woman with a posterior communicating artery aneurysm. Doctors Maidana, Duarte, Kuzli, Vargas, and Portillo completed the craniotomy surgery to clip the aneurysm.

The second patient was a 53-year-old woman with a right middle cerebral and anterior communicating artery aneurysm. Doctors Kuzli, Labín, Vargas, and Estigarribia successfully completed the surgery to clip the patient's aneurysm.

During these surgeries, Dr. Sharma provided instruction to two anesthesiologists and a total of 6 anesthesia residents. Both patients had good outcomes and were in stable condition following surgery.

#### **V. In-Kind Donations**

The mission team delivered in-kind donations, valued at US \$19,568, mainly for the establishment of the micro-surgery training laboratory.

#### **VI. Acknowledgements**

Solidarity Bridge is grateful for all who made this trip possible, including the following:

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Dr. Richard Moser, Neurosurgeon  
Lindsay Doucette, Program Director  
Maria Eugenia Brockmann, Senior Program Director

##### ***Paraguayan Medical Partners:***

Dr. José Kuzli, Neurosurgeon  
Dr. Pablo Maidana, Neurosurgeon  
Dr. Diego Servián, Neurosurgeon  
Dr. Willyam Vargas, Neurosurgical Resident (5th year)

Dr. Jorge Duarte, Neurosurgeon

Dr. Javier Labín, Neurosurgeon

Dr. Gabriel Estigarribia, Neurosurgical Resident (3<sup>rd</sup> year)

Dr. Myriam Alguilar, Anesthesiologist

And all the anesthesiologists, nurses, and other staff of Hospital Nacional de Itauguá.

***Archdiocese of Asunción Partners***

Archbishop Adalberto Martínez Flores

Bernardo Figueredo

***Paraguayan Ministry of Health Partners***

Dr. Julio Borba

Dr. Pablo Zapattini

Lic. Celia Irazusta