

Our team came together to address the challenges of providing neurosurgical care in low-income settings and developed projects to understand the care landscape in two countries: Nigeria and Uganda. Each team consisted of a diverse group of scholars, including Duke undergraduates, a Duke master's student team lead, and international team members from the respective countries. Our international collaborators — many of whom are medical students or neurosurgery residents in Uganda and Nigeria — brought essential expertise and intimate knowledge of the local systems, leveraging their lived experience as patients and providers to help us develop relevant, impactful projects.

Team Nigeria worked with an existing database to document care practices for pediatric traumatic brain injury (TBI) patients. We analyzed prehospital components like distance travelled to care and delays between injury and arrival at hospital as well as presentation characteristics, such as symptoms upon arrival and TBI severity. Our team found that pediatric patients presenting to Lagos State University Teaching Hospital for TBI primarily experience injuries due to falls and road traffic accidents and experience significant delays in reaching care. An overwhelming majority of patients took longer than 2 hours to reach care. Although most patients had mild injuries, a small number had severe TBIs, primarily from road traffic accidents, and received surgical intervention. Interestingly, injury patterns varied by age group, likely reflecting changes in activity as kids transition from spending more time in the home to more time in school. We also noted significant lack of documentation on mental health outcomes and limited follow up, indicating that there is a need for stronger support for patients post-injury.

Team Uganda analyzed a cohort of newborns treated at Mulago Regional Referral Hospital (MRRH) for neural tube defects (NTDs). NTDs remain highly prevalent in many African countries, despite being heavily preventable. While the burden of NTDs in Uganda has been partially characterized, we added new information to the existing data by analyzing profiles and early surgical outcomes in this specific region and also exploring associations with receiving surgical or nonsurgical care. We found myelomeningocele to be by far the most common lesion type, and lumbar to be the most commonly affected region. Many children had mothers with significant gaps in prenatal care, such as late initiation of folic acid, lack of ultrasounds, or fewer antenatal care visits than the recommended number. Babies who were referred to MRRH were much more likely to receive surgical care, and certain locations and types of NTDs were also associated with surgical intervention. Patients had very good outcomes overall, with almost all surviving to discharge, and very few surgical complications recorded.

Through this experience, we developed competency working across cultures. We learned to navigate collaboration across different time zones and to leverage each other's unique

experiences and perspectives. Ultimately, we have built long standing partnerships that will hopefully create positive change for patients in the future.