

Global Neurosurgery: Building Neurosurgery, Training, and Research



Neuroscience
Neurosurgery
Passion
Collaborative
Research
Vision
Duke Global
Neuroscience
DGNN
Diversity
Education
Integrity

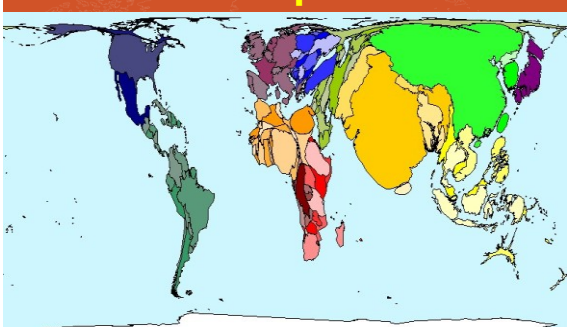
Michael M. Haglund MD, PhD, MACM, FAANS, FCS (ECSA)
Distinguished Professor of Neurosurgery, Neurobiology, and Global Health
Division Chief, Duke Global Neurosurgery and Neurology
Program Director, Duke Neurosurgery Training Program
Program Director Uganda East African Neurosurgery Training Program
Chief External Examiner, Fellowship in Neurosurgery COSECSA

Duke Division of Global Neurosurgery and Neurology

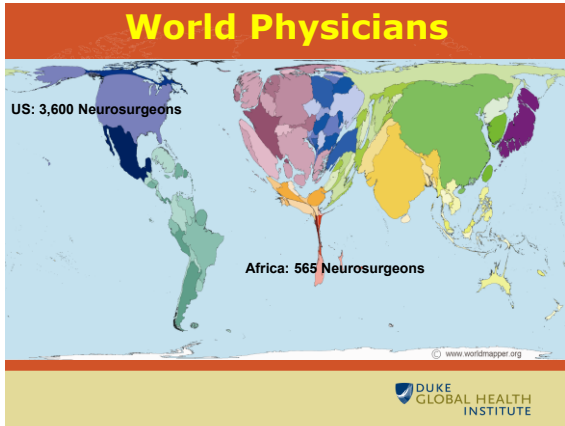


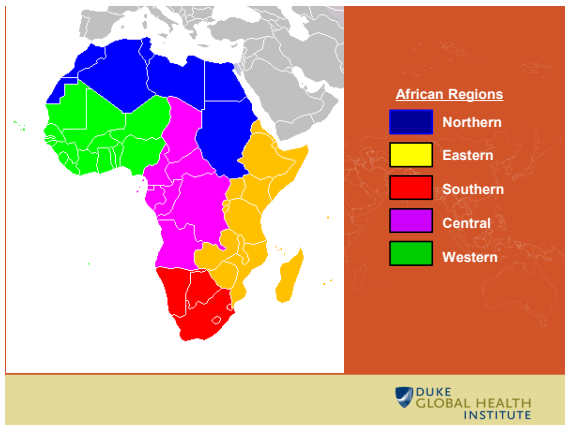
Disclosures: Nuvasive for DGNN Grant Funding for East Africa, UCB Pharmaceuticals for Epilepsy Centers of Excellence

World Population



DUKE GLOBAL HEALTH INSTITUTE dukeup.edu/globalhealth





Neurosurgery in Africa 2007

| Countries in East Africa | Total Population | No. of Neurosurgeons | Ration Neurosurgeons to population | Neuro-surgical Centers | Neurosurgery Training Program(s) |
|---|------------------|----------------------|------------------------------------|------------------------|----------------------------------|
| Northern Africa and South Africa: 486 of 563 NSUs Morocco | 32 million | 171 | 1:187,000 | 15 | 6 |
| Uganda | 30 million | 5 | 1:6 million | 2 | 0 |
| East Africa | 270 million | 27 | 1:10 million | 13 | 5 |
| United States | 320 million | 3,600 | 1:88,000 | 17 in NC | 95 |

Duke Neurosurgery East Africa Project

Problems: 2007

- 1) Only 1 Neurosurgeon for 6 million people in Uganda
- 2) No technology (one ventilator in 1,500 bed hospital)
- 3) No operating room dedicated to Neurosurgery
- 4) No Neurosurgery training program to train more neurosurgeons

Solutions: 4-Ts

- 1) **Technology:** Duke Global Health PLUS (Placement of Life-giving Useable Surplus): Dr. Dzau, Dr. Merson, Jane Pleasants
- 2) **Twinning:** Teams of 23-55 medical professionals (1-2 trips/year)
- 3) **Training:** Neurosurgery Training Program in Uganda (FIENS)
- 4) **Top Down Approach:** All specialties and their patients benefit



Duke Technology Transfer:

- Total Ten Years:

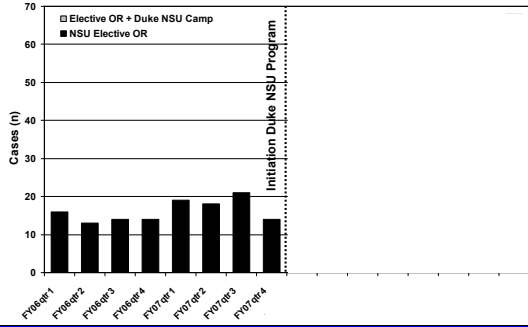
- 2007: \$1,275, 000/ 9 tons equipment/supplies & \$90,000 donations
- 2008: \$1,875,000/ 8 tons equipment/supplies & \$150,000 donations
- 2009: \$ 750,000 / 4 tons equipment/supplies & \$140,000 donations
- 2010: \$ 1,3750,000/ 7 tons equipment/supplies & \$135,000 donations
- 2012 (2): \$ 875,000/ 8 tons equipment/supplies & \$175,000 donations
- 2013 (2): \$ 850,000/ 10 tons equipment/supplies & \$240,000 donations
- 2014 (2): \$1,125,000,000/ 11 tons equipment/supplies & \$200,000 donations
- 2015 (2): \$1,005,000/13 tons equipment/supplies & \$375,000 donations
- 2016 (2): \$ 950,000/12 tons equipment/supplies & \$500,000 donations
- 2017 (2): \$ 1,050,000/11 tons equipment/supplies & \$275,000 donations

**Total: 44,118,536,000 UGX and 11,880,000,000 UGX in donations
\$12,255,000 and 93 tons of equipment & supplies,
\$3,300,000 donations to develop three Neurosurgery Hospitals**

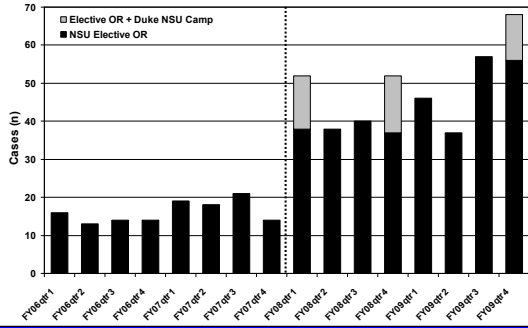
- Benefactors:

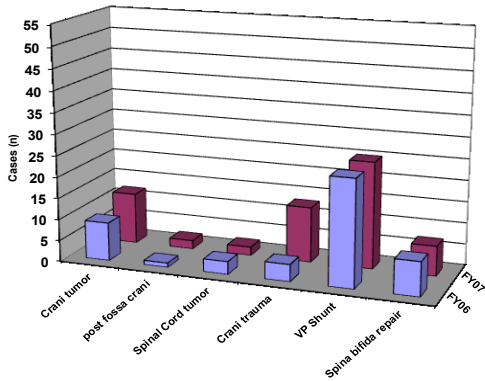
- Duke University Health System: Former Chancellor Victor Dzau, Jane Pleasants,
- Chancellor Eugene Washington
- Duke University: President Richard Brodhead
- Duke Global Health Institute: Director Michael Merson
- Division of Neurosurgery: Dr. Allan Friedman, Dr. John Sampson
- Corporate Support: Nuvasive, Synthes Spine, Integra Neuroscience, Biomet, K2M

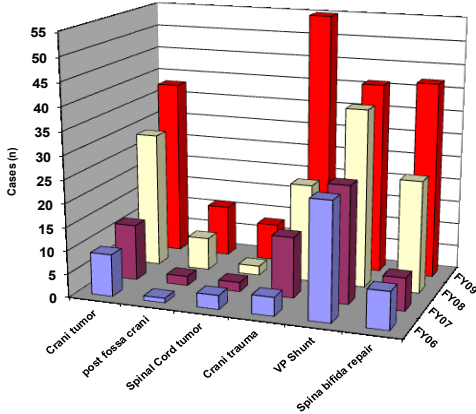
Neurosurgical Cases per Qtr



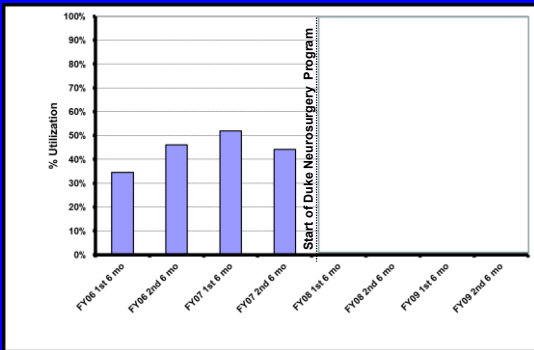
Neurosurgical Cases per Qtr



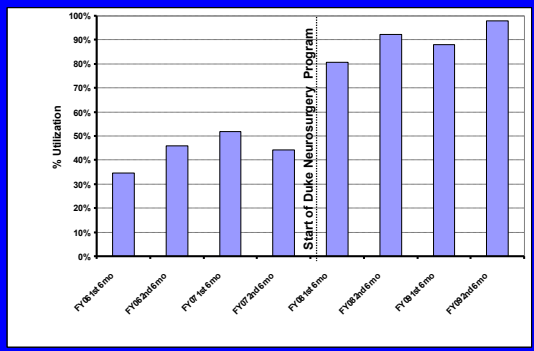


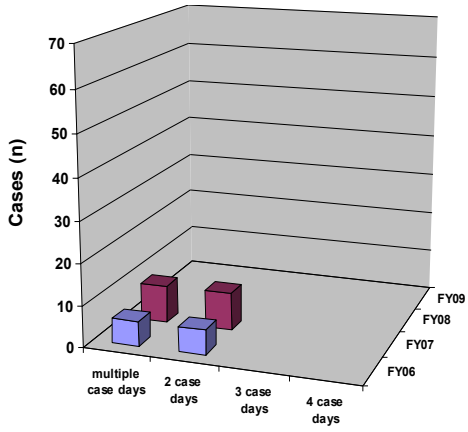


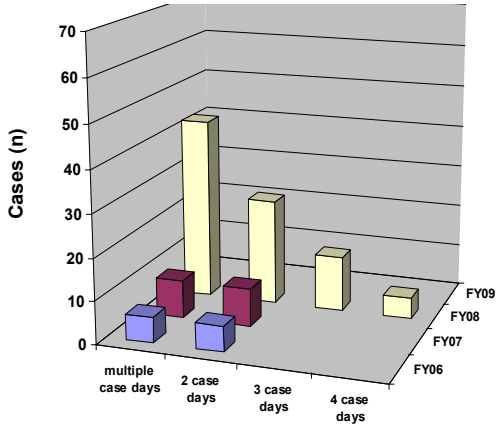
Elective Neurosurgery OR Utilization

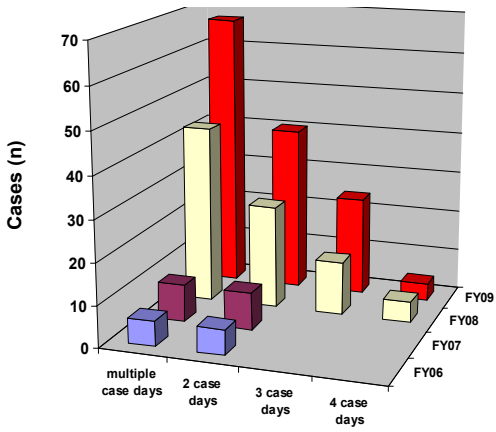


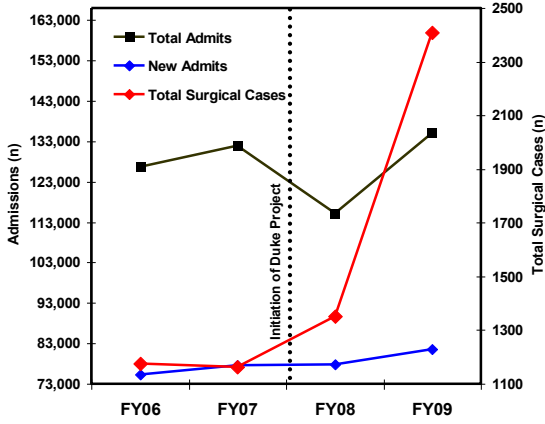
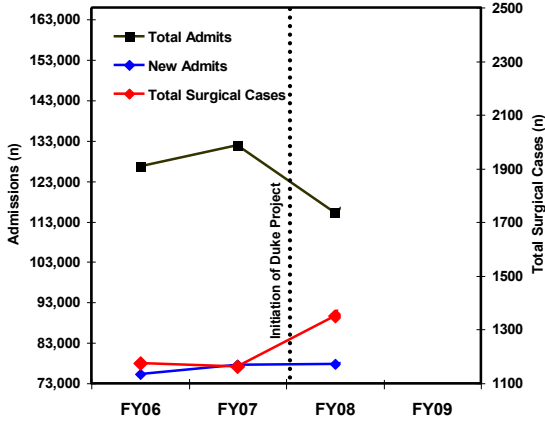
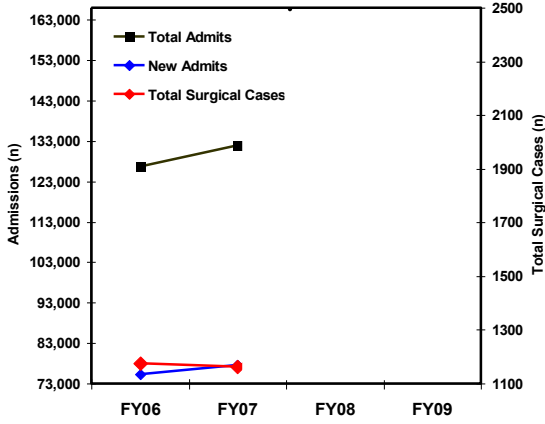
Elective Neurosurgery OR Utilization











Uganda Neurosurgery Training Program:
Co-Directors: Dr. Michael Muhumuza and Professor Michael Haglund
Duke Neurosurgery Curriculum and East African NSTP Curriculum
Start first two Ugandan residents Aug 2009: Dr. Obiga and Dr. Muhindo,
Second set of two residents started August 2012
MMed Neurosurgery at Makerere University, Fall 2018
Currently 5 more in program, 2 starting summer 2018, total 7 residents

Uganda East African Neurosurgery Training Program: Twinning
Uganda residents spend one month at Duke observing in year 4 COSECSA
Duke Neurosurgery Residents spend one week to 1 month Uganda PGY-5/6



Before new Neurosurgery Theater:

Neurosurgeons operate 2 days/wk
Trauma cases build up on Ward 3A
Elective cases best for resident training pushed off for clearing Ward 3A trauma


Hope to build capacity and training by building new NSU Theater





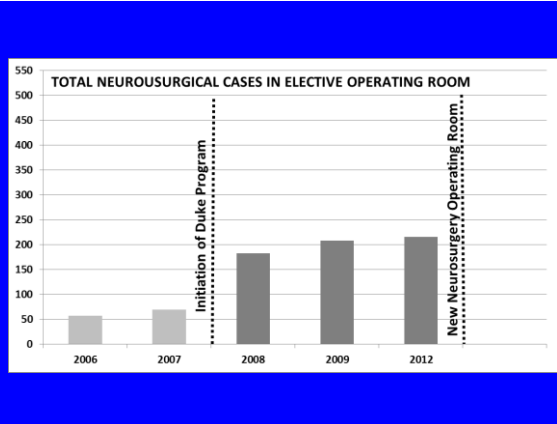


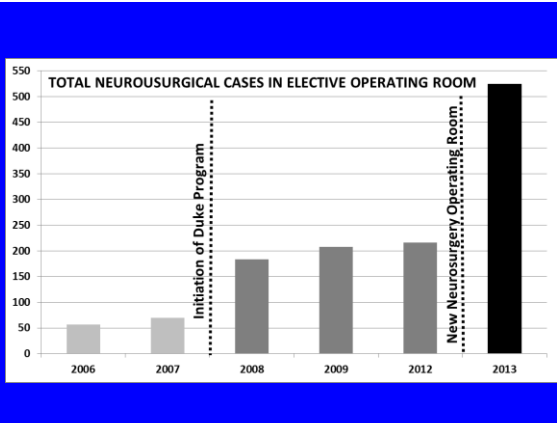
TRUTH EVERYDAY
Daily Monitor
Mulago gets Shs540m brain theatre



Dr. Michael Haglund shows Health Minister Christine Ondo the new equipment at the theatre.
January 14, 2013





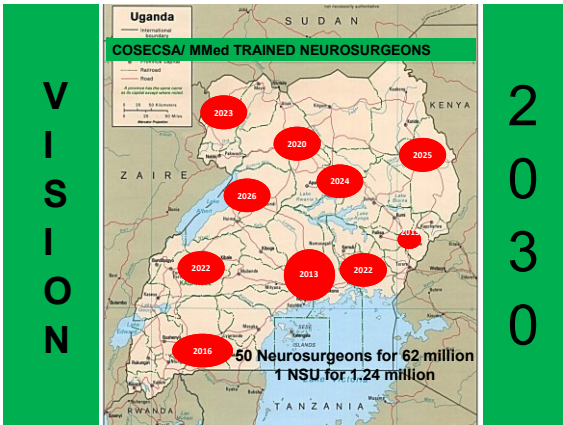




Duke Global Neurosurgery.. ..training Ugandans in Uganda

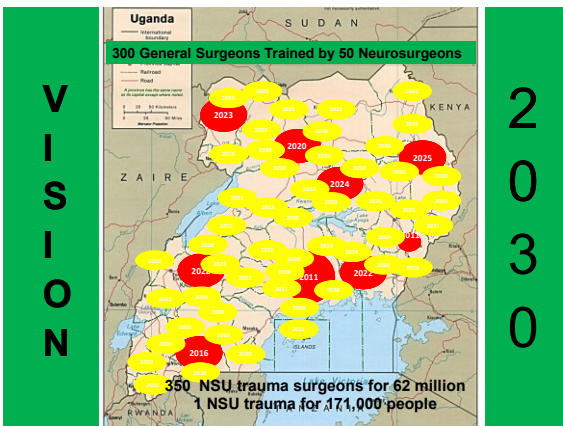


**TRAINING: 7 Neurosurgeons in Uganda 2013 Trained
5 graduates, 7 more in training,
Goal: 50 neurosurgeons by 2030**



V
I
S
I
O
N

2
0
3
0



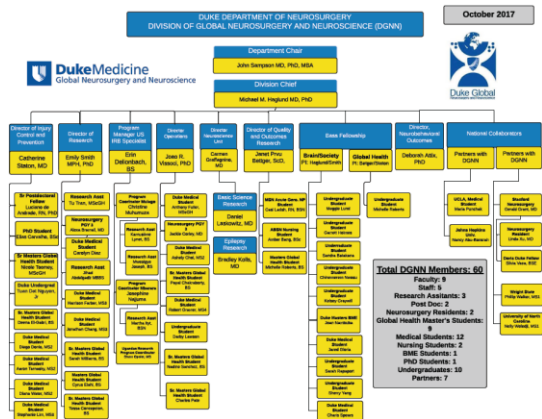
V
I
S
I
O
N

2
0
3
0



Published/Accepted (October 2014 – December 2015): 15 manuscripts

1. High Road Utilizers Surveys Compared to Police Data for Road Traffic Crash Hotspot Localization in Rwanda and Sri Lanka. Staton C, De Silva V, Krebs E, Andrade L, Rullisa S, Mallaararchchi B, Jin K, Vissoci J, Ostbye T. *BMC Public Health* acceptance 13Dec2015
2. Road Traffic Injury Prevention Initiatives: a systematic review and metasummary of effectiveness in low and middle income countries Staton CA, Vissoci JRN, Gong E, Toomey N, Wafala R, Abdelgadir J, Zhou Y, Liu C, Pei F, Zick B, Rattiff C, Rotich C, Jadue N, Andrade L, von Isenburg M, Hocker M Plos One acceptance 18Nov 2015 (Output of Global Injuries Course)
3. Building Neurosurgical capacity in low and middle income countries. Anthony Fuller, Tu Tran, Michael Muhumuza, Michael M Haglund. Published online: November 3, 2015. *eNeurologicalSci*.
4. Surgeons Over/Under Assessment of Surgical Needs (SOSAS) Uganda: update for household survey. Fuller A, Butler E, Tran T, Makumbi F, Luboga S, Muhumuza C, Chipman J, Green R, Gupta S, Kushner A, Galukande M, Haglund M. *World Journal of Surgery* 2015 Dec; 39(12):2900
5. A prospective registry evaluating the epidemiology and clinical care of Traumatic Brain Injury patients presenting to a Regional Referral Hospital in Moshi, Tanzania: challenges and the way forward. Staton, Milianga, Vissoci, Lester, Hocker, Gerardo, Mvungi. *Int J Inj Contr Saf Promot*. 2015 Aug 4:1-9. PMID: 26239625
6. Burden of Surgical Conditions in Uganda: Pilot Study of a Population-Based Survey in Wakiso District, Uganda. Butler E, Tran T, Fuller A, Makumbi F, Luboga S, Kisakyi S, Haglund M, Chipman J, Galukande M. *Surgery*. 2015 Sep; 158(3):764-72. doi: 10.1016/j.surg.2015.05.011. Epub 2015 Jun 16. PMID: 26088920
7. Distribution and characteristics of severe Traumatic Brain Injury at Malago National Referral Hospital in Uganda. Tran TM, Fuller AT, Kiryabwire J, Mukasa J, Muhumuza M, Ssenyojo H, Haglund MM. *World Neurosurg*. 2015 Mar;83(3):269-77. doi: 10.1016/j.wneu.2014.12.028. Epub 2014 Dec 19. PMID: 25529351
8. Central nervous system tumor distribution at a tertiary referral center in Uganda. Hater J, Adamson C, Oliga O, Tarembwa B, Ssenyojo H, Muhumuza M, Haglund M, Schroeder K. *World Neurosurg*. 2014 Sep-Oct; 82(3-4):258-65. doi: 10.1016/j.wneu.2014.06.040. Epub 2014 Jun 19. PMID: 24953394. Accepted with revisions.
9. Quality of the Development of Traumatic Brain Injury Clinical Practice Guidelines: A Systematic Review. Patel, Abraham, Reid, Tran, Toomey, Vissoci, Rodrigues, Viera, Gerardo, Euker, Mvungi, Staton. Accepted with revisions to PLoS One
10. Qualitative Evaluation of Trauma Delays in Road Traffic Injury Patients in Maringa, Brazil. Patel A, Vissoci JRN, Hocker M, Molina E, Morales Gil N, Staton C. Accepted with minor revisions to PloS One



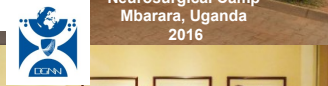
DGNN Google Docs on April 27, 2018, 48 manuscripts in 24 months

| Author | Title | Journal | Year | Status | DOI | PMID | URL |
|---|---|----------------------------|------|-------------------------------|----------------------------|----------|-----|
| Staton C, De Silva V, Krebs E, Andrade L, Rullisa S, Mallaararchchi B, Jin K, Vissoci J, Ostbye T | High Road Utilizers Surveys Compared to Police Data for Road Traffic Crash Hotspot Localization in Rwanda and Sri Lanka | BMC Public Health | 2015 | Accepted | | | |
| Staton CA, Vissoci JRN, Gong E, Toomey N, Wafala R, Abdelgadir J, Zhou Y, Liu C, Pei F, Zick B, Rattiff C, Rotich C, Jadue N, Andrade L, von Isenburg M, Hocker M | Road Traffic Injury Prevention Initiatives: a systematic review and metasummary of effectiveness in low and middle income countries | Plos One | 2015 | Accepted | | | |
| Anthony Fuller, Tu Tran, Michael Muhumuza, Michael M Haglund | Building Neurosurgical capacity in low and middle income countries | eNeurologicalSci | 2015 | Published | | | |
| Fuller A, Butler E, Tran T, Makumbi F, Luboga S, Muhumuza C, Chipman J, Green R, Gupta S, Kushner A, Galukande M, Haglund M | Surgeons Over/Under Assessment of Surgical Needs (SOSAS) Uganda: update for household survey | World Journal of Surgery | 2015 | Published | 10.1016/j.surg.2015.05.011 | 26088920 | |
| Staton, Milianga, Vissoci, Lester, Hocker, Gerardo, Mvungi | A prospective registry evaluating the epidemiology and clinical care of Traumatic Brain Injury patients presenting to a Regional Referral Hospital in Moshi, Tanzania: challenges and the way forward | Int J Inj Contr Saf Promot | 2015 | Published | | 26239625 | |
| Butler E, Tran T, Fuller A, Makumbi F, Luboga S, Kisakyi S, Haglund M, Chipman J, Galukande M | Burden of Surgical Conditions in Uganda: Pilot Study of a Population-Based Survey in Wakiso District, Uganda | Surgery | 2015 | Published | 10.1016/j.surg.2015.05.011 | 26088920 | |
| Tran TM, Fuller AT, Kiryabwire J, Mukasa J, Muhumuza M, Ssenyojo H, Haglund MM | Distribution and characteristics of severe Traumatic Brain Injury at Malago National Referral Hospital in Uganda | World Neurosurg | 2015 | Published | 10.1016/j.wneu.2014.12.028 | 25529351 | |
| Hater J, Adamson C, Oliga O, Tarembwa B, Ssenyojo H, Muhumuza M, Haglund M, Schroeder K | Central nervous system tumor distribution at a tertiary referral center in Uganda | World Neurosurg | 2014 | Published | 10.1016/j.wneu.2014.06.040 | 24953394 | |
| Patel, Abraham, Reid, Tran, Toomey, Vissoci, Rodrigues, Viera, Gerardo, Euker, Mvungi, Staton | Quality of the Development of Traumatic Brain Injury Clinical Practice Guidelines: A Systematic Review | PLoS One | 2015 | Accepted with revisions | | | |
| Patel A, Vissoci JRN, Hocker M, Molina E, Morales Gil N, Staton C | Qualitative Evaluation of Trauma Delays in Road Traffic Injury Patients in Maringa, Brazil | PloS One | 2015 | Accepted with minor revisions | | | |

Neurology
Neurosurgery
Passion
Collaborative
Research
Diversity
Vision
Duke Global
Neuroscience
Education
Integrity
DGNN




Neurosurgical Camp
Mbarara, Uganda
2016



Duke University Bass Foundation
Research Group
Kampala, Uganda
July 2016

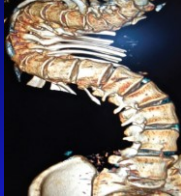


Uganda Neurosurgery
Residency
Mbarara, Uganda



Spinal Surgery in Ghana: How We Create A Center of Excellence

O. Boachie-Adjei, M.D. DSc.
 President and Founder FOCOS
 CEO, Medical Director and Surgeon in Chief
 FOCOS Hospital
 Past President
 Scoliosis Research Society
 Prof. Orthopedic Surgery
 Weill Medical College of Cornell University
 Chief Emeritus Scoliosis Service
 Hospital For Special Surgery, New York






Author's Disclosure Information

Oheneba Boachie-Adjei, MD
 DePuy Spine, (a,b,e)
 K2M, (a,b,d)
 Weigao Co (b,c)

- a) Grants/Research Support
- b) Consultant
- c) Stock/Shareholder
- d) Speakers' Bureau
- e) Other Financial Support




Global Health and Orthopedics

– Ranking of major causes of death and disability (% DALYs)

- Cardiovascular and circulatory diseases 11.8%
- All neoplasms 7.6%
- Mental and behavioural disorders 7.4%
- **Musculoskeletal disorders 6.8%**


The fourth greatest impact on the health of the world population, considering both death and disability (DALYs)
 (Lancet 15 December 2012)



FOCOS Orthopaedic Hospital


MISSION: To provide optimum orthopaedic care and improve quality of life in Ghana and other countries

VISION: A sustainable infrastructure for state of the art orthopaedic care and education.




Challenges

- Human Resources
- Finances
- Infrastructure
- Complex Orthopedic conditions
- Sustainability






W.H.O. SAYS EBOLA CASES TOP 10,000 GLOBALLY



Human Resource Challenge

The macro backdrop clearly demonstrates the need for an organization like FOCOS to intervene and provide quality healthcare to the underserved

- Healthcare delivery systems in Ghana and Africa as a whole are significantly under-resourced relative to global norms, due to economic and other resource constraints
- Acute shortage of trained, qualified medical professionals adds further constraints and creates challenges in the ability to deliver quality care to a broad segment of the population
- Ghana, for example, has only 20 orthopaedic surgeons serving a population of over 20 million people
 - Only 60 Anesthesiologists in the entire country
 - 1 Physiotherapist
 - Overall Doctor:Population ratio of 0:07
- Without the presence of FOCOS in the market, access to high quality orthopaedic care simply would be elusive



USA, Mexico, Argentina, Spain, Italy, Norway, Japan, Turkey, Australia
India, Nigeria, Sierra Leone, New Zealand, Kenya, Greece





Funding Challenge

- Ghana fares poorly among African and global averages for total Expenditure on health.
- The average Ghanaian cannot afford major orthopedic surgical care and the NHIS doesn't cover such surgical services.

World Bank: Classifies countries based per capita gross national income.



Fee For service and sponsorship program via Fundraising (30% patients subsidized)

Health Expenditure Indicators 2014

| No | Indicator | Ghana Value | Africa Average | Global Average |
|----|--|-------------|----------------|----------------|
| 1 | Total Expenditure on health as % of gross domestic product (2014) | 3.6 ↓ | 5.5 | 10.0 |
| 2 | General government expenditure on health as % of total expenditure on health (2014) | 59.8 ↑ | 47.8 | 60.1 |
| 3 | Private expenditure on health as % of total expenditure on health (2014) | 40 ↓ | 52.2 | 39.9 |
| 4 | General government expenditure on health as % of total government expenditure (2014) | 7.0 ↑ | 10.0 | 15.5 |
| 5 | Out-of-pocket expenditure on health as % of private expenditure on health(2014) | 67 ↓ | 60.1 | 45.5 |
| 6 | Per Capita total expenditure on health at average exchange rate (US\$) (2014) | 58 ↑ | 107 | 1057 |
| 7 | Per capita government expenditure on health at average exchange rate (US\$) (2014) | 35 ↑ | 51 | 635 |

- ### FOCOS Funding strategies
- Government Seed Grant
 - FOCOS-MOH CO-Consignment initiatives for imports
 - International Volunteerism
 - International Multi-industry partnership
 - Global Private donors and Benefactors
 - Private foundation sponsorships of patients
 - FOCOS USA GRANTS
 - Private Loans

Global Partners

The image displays a collection of logos for global partners. At the top, it features Medtronic, Exactech, and GLOBUS RELIEF. Below these are logos for HOSPITAL FOR SPECIAL SURGERY, K2M, MedShare, and Franji. Further down, there are logos for Zimmer, AlloSource, SN, Biotronic, Wright-Filippis, American Jewish Joint Distribution Committee, JDC, Ministry of Health, DePuySpine, Haemonetics, Stryker, Bloomberg Philanthropies, Africa Surgery, and AAOS. The logos are arranged in a grid-like fashion on a dark background.

FOCOS

STATE OF THE ART HOSPITAL

FOCOS ORTHOPAEDIC HOSPITAL

- #1 Number One Orthopaedic Hospital in Ghana
- #2 Second Best Private Hospital in Ghana



FOCOS

FOCOS Surgical THEATRE

Win operating theaters with state of the art equipment

- Advanced anaesthesia machines, cell savers, neuro-monitoring devices, C-arms, high definition cameras.
- Headed by a qualified perioperative nurse manager



FOCOS

INTENSIVE CARE UNIT/RECOVERY

Full coverage by anesthetists and 5 critical care nurses

- A 6 bed unit with patient nurse ratio of 2:1 when in full capacity
- All the essential equipment of a first class ICU including ventilators, monitors, defibrillators, perfusers, infusion pumps and other critical care equipment in optimum working condition





LAB, Physiotherapy and Radiology

Manned by qualified biomedical scientists , laboratory technician

- Fully automated with capacity to do most investigations
 - hematological analysis,
 - serologies ,blood banking and biochemistries.





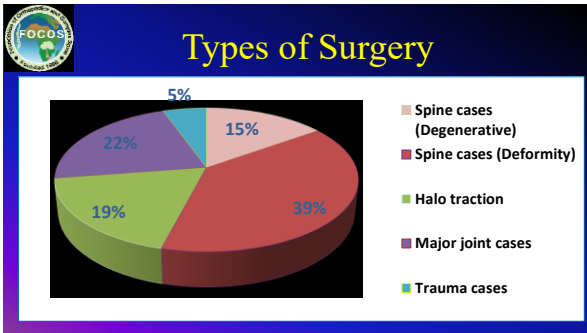
Pharmacy/Nutrition and Dietetics

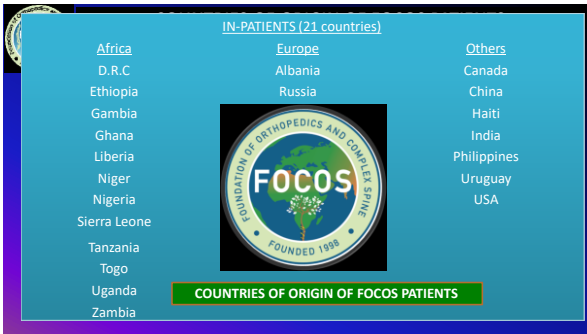
The pharmacy is manned by

- One (1)Senior Pharmacist and Two (2)Pharmacy Technicians
- It offers a full complement of various classes of drugs available to patients
- Staffed by qualified nutritionists/dietician Develops meal plans to suit individual patient needs including nutritional rehabilitation for our malnourished patients



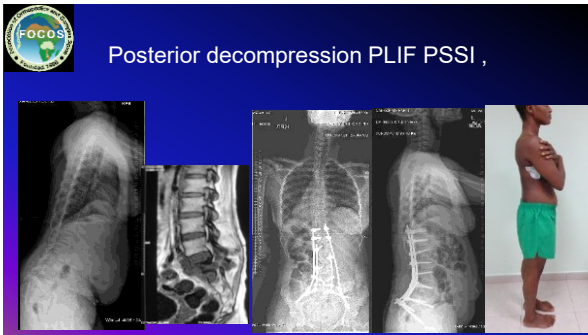






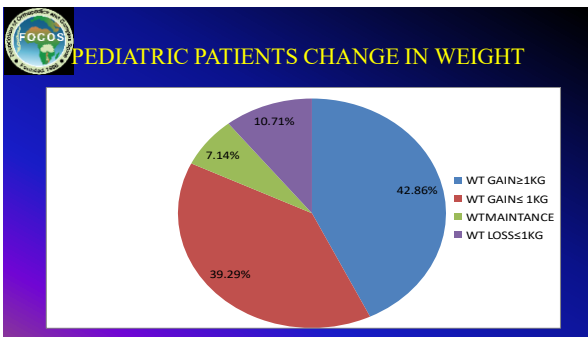
SS063 33F
Progressive back pain and difficulty standing and walking

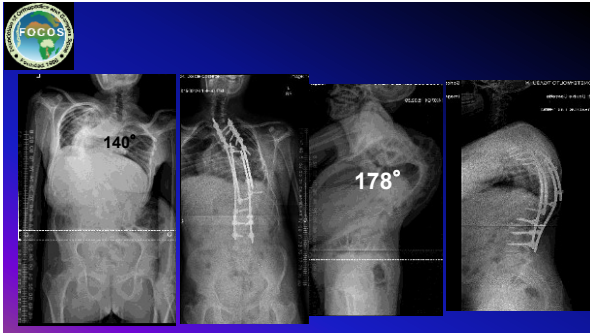
Tuberculous Spondylitis:

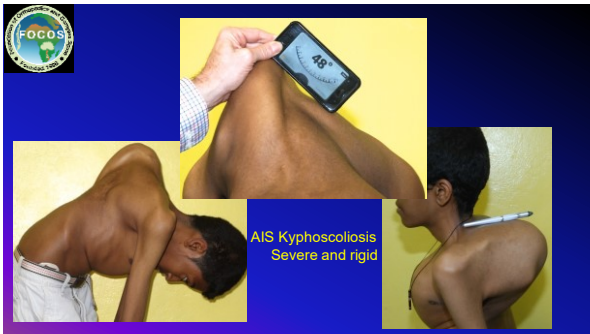


FOCOS Nutritional Pathways

- Nutrition status is a significant factor in the perioperative care of the orthopedic patient
- 90% orthopedic patients from Ethiopia seen at the department were undernourished or small for their age
- Early identification of patients who are malnourished or at risk is essential which leads to timely nutrition interventions

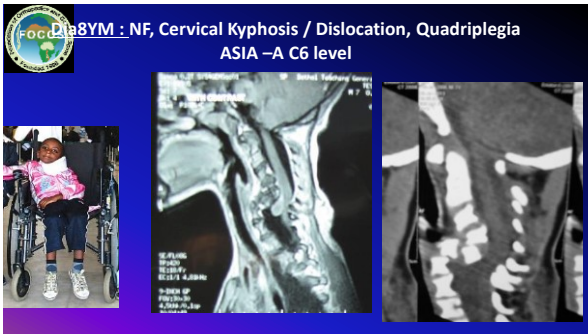


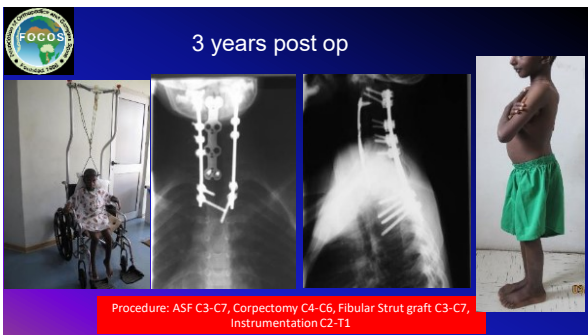












ENL968 57F 12-05-1960 NG

Known case of multiple myeloma with Myelopathy

- She previously had T10 Corpectomy + ASF T9-T11, PSF T7-L1 done in 2015.
- Two years Post op she was noticed to have collapsed L2 Vertebra and subsequently had Extension of PSF T11-S1.
- She currently presents with complaints of neck pain and upper back pain as well as occasional numbness in both hands.
- 2018 Collapsed C3 Treated with PSF C2-T5

| Patient Details | | | | |
|-----------------|---------|---------|---------|------|
| Date | Comment | Ht (cm) | Wt (kg) | BMI |
| 09-03-2015 | Pre-op | WCB | WCB | WCB |
| 21-09-2015 | 6 mo | 155.3 | 61.7 | 25.6 |
| 26-09-2016 | 1 yr | 155.3 | 72.2 | 29.9 |
| 27-06-2017 | 2 yr | 153.5 | 58.9 | 25 |
| 19-02-2018 | 3yr | 155.3 | 72.3 | 30 |

Oncology Patients

Past Medical History:

- Appendicectomy (1973)
- 3 Cervical Cerclage
- T10 Corpectomy + ASF T9-T11, PSF T7-L1
- 6 Cycle of Chemotherapy for multiple myeloma
- Hypertensive

Medications:





- Exforge 10/160mg
- Tramadol



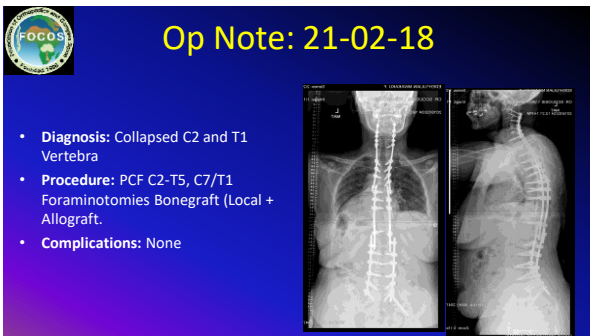


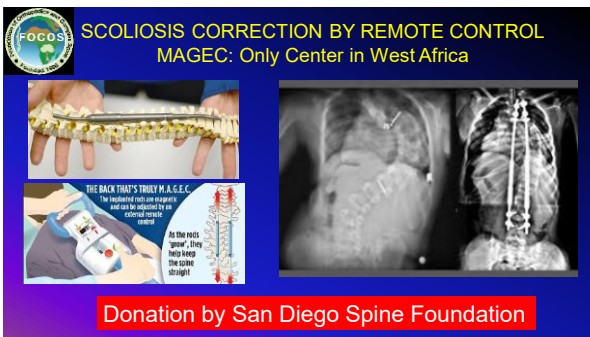
2015

2017







Donation by San Diego Spine Foundation

Spinal Trauma in Tanzania

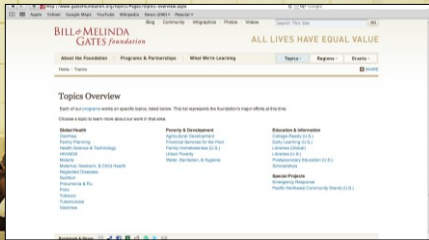
Roger Härtl, MD

Professor of Neurosurgery
Director of Spinal Surgery
Director of the Weill Cornell Center for Comprehensive
Spine Care
Department of Neurosurgery
Weill-Cornell Medical College
New York, NY
USA



WAITING ROOM

**"Surgery is the neglected stepchild
of global public health"**

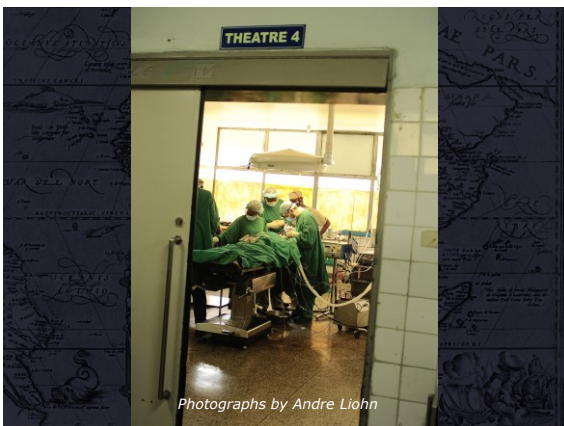


- 45-50 million people
 - >100 tribes
 - 45% Muslim
 - 45% Christian
 - Tribal religions
- Economy
 - Agriculture, Service industry, mining, industry
 - Avg. salary \$60-70/month





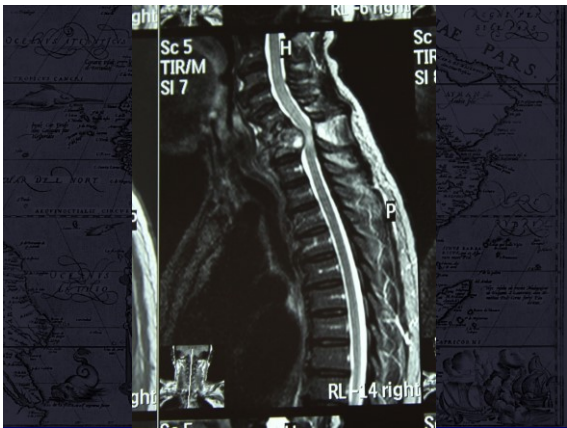
Photographs by Andre Liohn

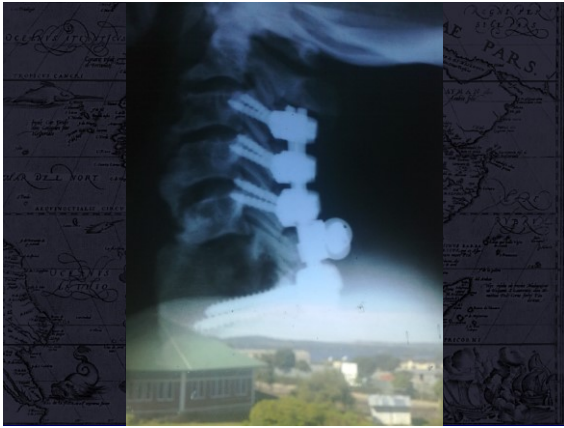


Photographs by Andre Liohn















Why Does Surgery Matter?

Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development



John G. Moore*, Andrew J. M. Leather*, Lars Hagander*, Blake C. Abshire, Nivaido Aboris, Emmanuel A. Ameh, Stephen W. Bickler, Lesong Contah, Anna J. Dale, Justine Davies, Eunice Odehok Merside, Shemaz El-Halabi, Paul E. Farmer, Abul Gawande, Bowen Gilles, Sarah I. M. Greenberg, Carlo E. Gomez, Russell L. Green, Edna Adan Ismail, Thaim Boyer Kamara, Chris Lary, Garbriel Lundig, Nyemgo C. M. Mardawire, Nikhil P. Nayak, Johannes N. Nkwel, Edgar Roubini, John Rose, Mahesh R. Roy, Mark C. Sheiner, Richard Sullivan, Stéphane Verguet, David Waters, Thomas C. Waller, Jan F. Wilson, Gavin Young, Winnie Yip

- 5 billion people do not have access to surgical and anaesthesia care
- 143 million additional surgical procedures are needed
- Investing in surgical services in LMICs is affordable, saves lives, and promotes economic growth
- Surgery is an "indivisible, indispensable part of health care"

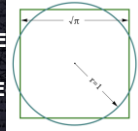
Published online April 27, 2015

Questions



- How can we have an impact from overseas?
- Limited time – 1 week/year...
- Limited resources
- Cultural barriers
- Language
- Different priorities, expectations align?
- Who is right, who is wrong?
- Fragmented groups in NA & E
 - little coordination
- Communication challenges: E-WIFI

Squaring the Circle



Weill Cornell Neurosurgery Initiative



Definition of achievable goals

- To...
 - assess the current management of neurosurgical diseases
 - develop a close network that fosters exchange, teaching and communication
 - train physicians and health care workers in best management practices
 - implement stepwise and reasonable changes that will improve neurosurgical care

7-point SUSTAINABLE Weill Cornell Global Neurosurgery Initiative

1. Yearly visits to teach & train
2. Yearly Neurosurgery symposium in Tanzania
3. Observational fellowship at Weill Cornell: TZ → Cornell *6 fellows so far*
4. One year Global Neurosurgery Fellowship Cornell → TZ
5. Clinical research
6. Weekly Skype conferences
7. Publications



- 2011
- 2013
- 2014
- 2015
- 2016
- 2017

2nd Hands-On Neurotrauma Course for the East, Central, and Southern African Region

May 11-15, 2015



"We welcome all young African Neurosurgeons to Tanzania to enhance their knowledge and skills for the benefit of the people of our Africa."

JAKAYA KIKWETE





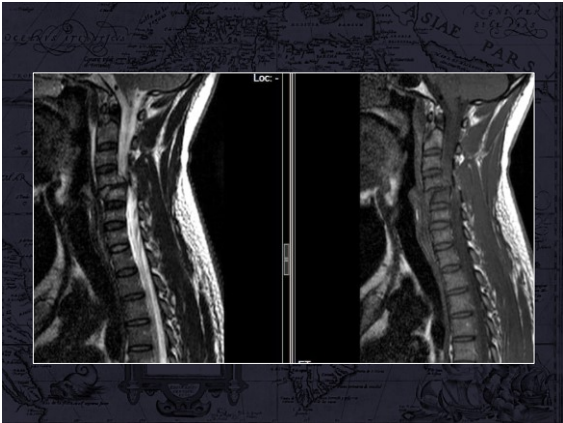
Results: Primary Outcome

• Overall, surgery was the only factor associated with improvement in AIS score from admission to discharge ($p < 0.003$).

Factors related to positive change in AIS Grade

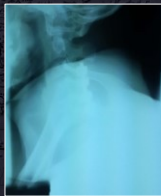
Shorter time to surgery
 Surgery ($p = 0.003$)
 Younger age
 Falling mechanism < 3mts
 Private insurance

| | AIS Improvement at discharge ($p = 0.03$) | Mortality ($p = 0.007$) |
|--------------------|---|---------------------------|
| Surgery Group | 21.4% | 1.6% |
| Conservative Group | 8.2% | 16.1% |



C3-C6 CERVICAL REDUCTION AND FUSION + C4-C6 DECOMPRESSION WITH CORTICAL SCREWS.

- Patient was operated 12 days after arrival.
- Postoperatively:
 - Patient kept with soft neck collar
 - Started physiotherapy 5 days after the surgery
- Total admission: 32 days
- Complications: NONE
- ON DISCHARGE:
 - ASIA C



Conclusion



- **Surgery matters**
 - "Investing in surgical services in LMICs is affordable, saves lives, and promotes economic growth" LANCET
- **Surgical training and education takes time and happens "one-on-one"**
- **Identify champion surgeons**
- **Weill Cornell Neurosurgery SUSTAINABLE Model To Maximize impact:**
 1. Regular visits
 2. Courses
 3. Permanent fellowships in TZ
 4. 3 months fellowships in NYC
 5. Research:
 1. collect data and measure impact
 6. Skype calls: communication
 7. Publications



Weill Cornell Brain and Spine Center

- About Us
- About Neurosurgery
- Our Neurosurgery Team
- In The News
- Blog
- Residency Program
- Fellowships
- Medical Student Fellowship
- Continuing Medical Education
- Research
- Ways to Give
- Patient Guide
- For Health Professionals
- Speakers' Bureau
- Diversity & Inclusion
- Medical Student Internship

Mission in Tanzania

Home > Mission in Tanzania

Dr. Härtl and team made their annual trip to Tanzania in October of 2017, bringing much-needed training to this under-served population. The video below is an overview of the project:



<http://weillcornellbrainandspine.org/tanzania>
