CRASH
Guiding the future of patient care

Challenges and Opportunities in Global Health & Anesthesia

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Anschutz

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Disclosures

Dr. Jake Gamboa is an NIH funded T32 Grant recipient

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Objectives

1. Understand how workforce, supply chain, infrastructure and health system barriers impact delivery of safe anesthesia care in resource limited settings.
2. Describe sustainable global health partnerships focused on building anesthesia and surgical capacity through training, research and advocacy.
3. Discuss opportunities for anesthesia providers to engage in global health work through service, education, research and advocacy.
4. Formulate an individual approach to global health engagement incorporating principles of cultural humility, collaborative partnership and sustainability

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Poll question:
Have you ever personally participated in international medical work?

A. Yes
B. No

4

Name the countries where you have done international medical work

- World Cloud

5

Poll question:
if yes, what work were you involved with?

A. Non-anesthesia related
B. Direct anesthesia care during surgical mission trip
C. Clinical experience during training or residency
D. Education or research initiatives
E. Donations or capacity building initiatives

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Poll question: How much time do you feel you could dedicate to global work within your current practice?

- *Open response or the following:*

A. Less than one week
B. One week
C. Two weeks
D. Three weeks
E. Four weeks or greater

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Poll question: What barriers exist that prevent you from participating in global work?

A. Cost
B. Time
C. Lack of support within current practice
D. Family obligations
E. Not convinced of the value of the work

8

What have you done?

- Please share your stories of how you have engaged in global health work in the past

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The global challenge

5 billion people lack access to safe surgical and anesthesia services worldwide.

Resource-limited settings face critical shortages of skilled anesthesiologists.

Unsafe anesthesia contributes to preventable morbidity and mortality.

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Global burden of surgical disease

- 5 billion people lack access to safe, affordable surgical and anesthesia care when needed[1]
- An additional ~150million surgeries need to be performed annually to meet demand. Greatest demand being found in sub-Saharan Africa and South and Southeast Asia.
- Of the ~ 280 million cases performed annually, only 3% of surgical procedures are performed in LMIC
- Anesthesia related resources (human, infrastructure, education) are inadequate to meet current and future demand.
- 35,000 anesthetics are performed daily without pulse oximetry
- By the year 2026 the global burden of surgical disease will eclipse that of HIV, TB, and malaria.
- **Lack of access to safe anesthesia and surgery leads to increased morbidity and mortality across all ages, genders, disease states.**

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Global Anesthesia Workforce Crisis: A Preliminary Survey Revealing Shortages Contributing to Undesirable Outcomes and Unsafe Practices

Dubowitz G et al
World Journal of Surgery
2010

- 2010 study lead by the UCSF and Global Partners in Anesthesia and Surgery.
- Attempted to quantify numbers of physician anesthesiologists and anesthesia providers in LIC-MIC.
- Surveys were sent to 88 possible countries: 14 of 88 countries provided responses.
- Information was also gathered on in-country training programs.

- **Global anesthesia crisis is far worse than the global surgical workforce crisis.**

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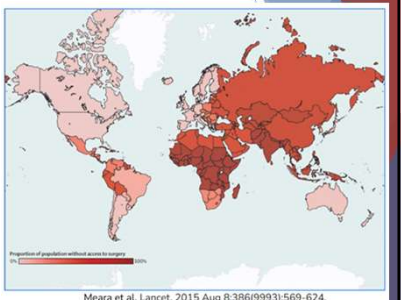
Global Shortage

- Low and Middle Income Countries (LMIC) often face critical shortages of surgical personnel, with only 0.13 to 1.57 surgeons and 0.1 to 4.9 anesthesiologists per 100,000 people.
- In contrast, the U.S. has nine surgeons and 11.4 anesthesiologists per 100,000 people.

Percy, S (2025). Global Burden of Surgical Disease. Open Anesthesia



Meara et al. Lancet. 2015 Aug 8;386(9993):569-624.

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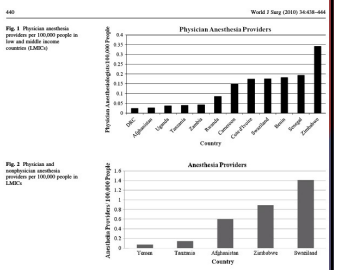
Global anesthesia workforce Crisis

- Absolute numbers of specialists in country are difficult to attain and unreliable:
- Physician anesthesiologists:
  - Uganda: ~60 for 38 million citizens
  - Kenya: 13 (of 120 total) for ~40 million citizens
  - USA: 1:4,000 citizens



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SCHOOL OF MEDICINE
Department of Anesthesiology
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Global anesthesia workforce Crisis

- Residency training programs:
  - Zimbabwe→ 1 program, 150 residents per year
  - Zambia→ zero programs, zero residents
  - Afghanistan→ zero programs, zero residents
  - Uganda→ 2 programs, 6 residents per year
    - Residents are required to pay for training! ~$1,750/year
- Brain Drain effect
- Resources diverted for other projects/public health initiatives: HIV/AIDS, vaccinations, etc.

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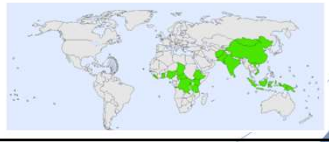
Anesthesia Care Capacity at Health Facilities in 22 Low- and Middle-Income Countries.

World J Surg

- Data collected by local Ministries of Health, WHO officers, and local health officers.[4]
- Only countries that provided data for >4 facilities with >5 hospital beds were included.
- 22 total countries, 19 LIC and 2 MIC. ~590 health care facilities
- Assessed infrastructure and anesthesia equipment: electricity, oxygen, water, and airway equipment.



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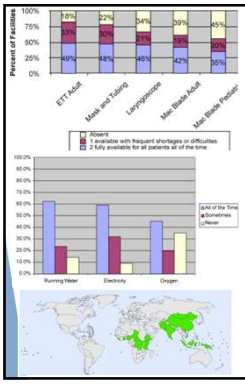

Anesthesia Care Capacity at Health Facilities in 22 Low- and Middle-Income Countries.
World J Surg 2016 May

- Data collected by local Ministries of Health, WHO officers, and local health officers.
- Only countries that provided data for >4 facilities with >5 hospital beds were included.
- 22 total countries, 19 LIC and 2 MIC. ~590 health care facilities
- Assessed infrastructure and anesthesia equipment: electricity, oxygen, water, and airway equipment.
- Inadequate: providers, infrastructure, equipment.
- 35% of health care facilities had NO access to oxygen
- 50% have NO access to an anesthesia machine or spO2 monitoring capability
- LMICs have increased death and disability as a result of these barriers.

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Our Mission

Mission:

Advance safe anesthesia and surgery by increasing capacity through education, clinical innovation, and research through the development of sustainable collaborations.

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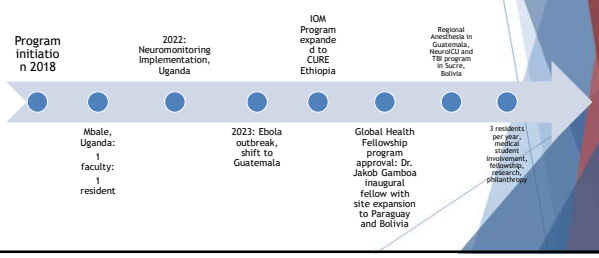
The Global Health Program: Timeline at CU



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How do you build capacity?

1. Engage partners
2. Needs assessment
3. Goal setting
4. Strategy development
5. Implementation
6. Monitoring and evaluation

Essential components:

- Stakeholder buy-in
- Sustainability
- Contextualization
- Continuous improvement

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Making a Difference Globally: advancing perioperative safety

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MAKING A DIFFERENCE GLOBALLY: EDUCATIONAL EXCELLENCE

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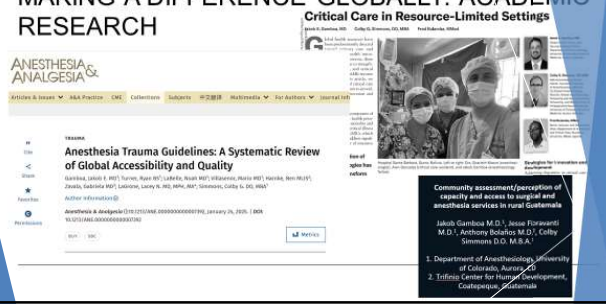
MAKING A DIFFERENCE GLOBALLY: ACADEMIC RESEARCH



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Ten significant global health inequities relevant to anesthesia and pain

1	Five billion people worldwide do not have access to safe and affordable surgical and anesthesia care
2	More people die from surgically treatable conditions and unsafe surgical care than from HIV, TB, and malaria combined, yet less than 1% of development funding for health supports delivery of anesthesia and surgery
3	Only 6% of all operations are done in LMICs, yet half of all postoperative deaths occur in LMICs
4	The anesthesia mortality rate in HIC is approximately 1:100,000, while in some LMICs it is as high as 1:100
5	Over 30 million people face catastrophic healthcare spending per year, mainly in LMICs
6	150 countries are without reliable access to essential analgesics such as morphine
7	There is a large discrepancy between the global chronic pain burden and the resources allocated to address it in HICs and especially in LMICs
8	Marginalized populations are less likely to receive 'standard' anesthesia care, such as labour epidurals or analgesia prescribing, in both HICs and LMICs
9	HIC-led policies on global anesthesia and analgesia drug availability disproportionately limit access to essential medications in LMICs
10	Rural and poor populations in HICs and LMICs are less likely to have access to specialist anesthesia and pain providers

HICs = high-income countries; HIV = human immunodeficiency virus; LMIC = low- and middle-income countries; TB = tuberculosis

Wollner et al. Can J Anaesth. 2020 Aug;67(8):924-935

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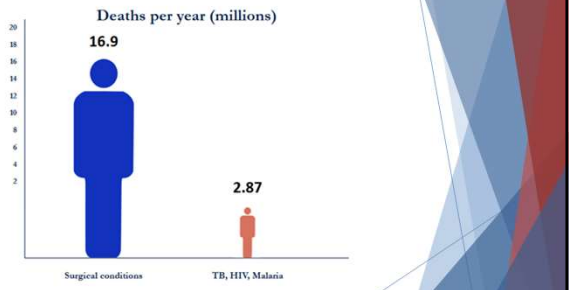

Meara et al. Lancet. 2015 Aug 8;386(9993):569-624.

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Challenges in LMICs

- Limitations in funding and infrastructure can result in an inadequate supply of facilities (hospital beds, operating rooms, Post-Anesthesia Care Unit), basic equipment and monitors, medications, emergency supplies and personnel.
  - Lack of electrical power, oxygen, and water can impede services.
- Insufficient educational and training programs contribute to the shortage of the specialized workforce needed to address surgical demands.
- Regional, economic, or political instability can hinder collaborative efforts and worsen disparities associated with socioeconomic determinants.

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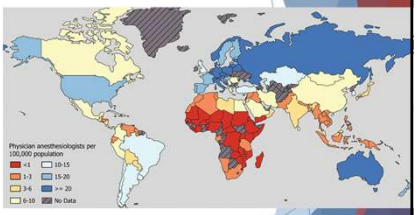
Workforce limitations

- Variable training pathways
- Limited access to continuing or advanced education programs
- High clinical burden- little time for supervision or teaching



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Challenges continued..

- Supply chain barriers
  - Lack of essential medications
  - Limited airway supplies, regional anesthesia supplies
  - Reuse of disposables
- Infrastructure barriers
  - Electricity, O2, PACU/ICU capacity, monitoring etc
- Health systems barriers
  - Weak referral systems, financial barriers for patients, data scarcity

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Advancements of anesthesia/surgery in global spotlight

- Historically, surgical and anesthesia care were not viewed as priorities or cost-effective interventions in global health.
  - Focused on short-term mission trips to deliver care.
- Now greater recognition of the need to improve surgical systems globally to prevent avoidable mortality and morbidity.
- Furthermore, the landscape of the global burden of disease has shifted, as deaths from surgically treated conditions are now greater than those from HIV, tuberculosis, and malaria combined (Quene).

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Key initiatives

- 2004, the WHO established the Emergency and Essential Surgical Care (EESC) program to assist with the development and training materials at first-referral facilities in LMICs.
- 2005, the WHO Global Initiative for Emergency and Essential Surgical Care (GIEESC).
- 2009: the WHO Guidelines for Safe Surgery 2009: Safe Surgery Saves Lives
- 2014, the Lancet Commission on Global Surgery was launched as a multidisciplinary, international commission to advance global surgery.
  - The 2015 commission statement, "Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development" was a landmark statement which reinforced surgery and anesthesia as integral components of health care and described key policy recommendations for international development.
- 2015, the Disease Control Priorities, 3rd Edition (DCP-3), Volume 1 on Essential Surgery was released which identified 44 surgical procedures that are essential, cost-effective, and feasible to implement in LMICs.
- 2015, the World Health Assembly unanimously passed a resolution (Resolution 68.15) to strengthen emergency and essential surgery and anesthesia as part of universal health coverage, providing a political mandate for action.
- National Surgical, Obstetric and Anesthesia Plans (NSOAPs) have been developed, which are national health plans focused on surgical capacity and access that are integrated into a country's health policy and strategic plan.
- Many non-profit organizations
  - Médecins Sans Frontières, the Global Surgery Foundation, Operation Smile, Project C.U.R.E., and the Lifebox Foundation.

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From short-term service to sustainable impact

- Less focus on…
  - Fly in/fly out care
  - Parallel systems
  - Equipment donation without triaing
  - Lack of local engagement
- More focus on..
  - Long-term partnerships
  - Capacity building
  - Local involvement and leadership

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Models for Global Surgical Engagement: A Real World Example

"Give a man a fish, and you feed him for a day; teach a man to fish, and you feed him for a lifetime."

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Models for Global Surgical Engagement:A Real World Example

- Fishing trips
  - Operation Smile directly performs orofacial cleft surgery around the world
- Lessons in fishing
  - Smile Train supports local provision of orofacial cleft surgery around the world
- What it really takes to fish
  - Using lessons learned from Operation Smile and Smile Train to guide global health engagement

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Our Protagonists

- People living with cleft lip and/or palate around the world
- Congenital orofacial clefts are one of the most common congenital anomalies
- Cleft lip
  - Ideally repaired within first 3- 12 months of life
- Cleft palate
  - Ideally repaired within first 9 - 18 months of life
- Cleft lip and/or palate occur in approximately 1 in 700 live births
- Global prevalence of orofacial clefts
  - ~4.6 million

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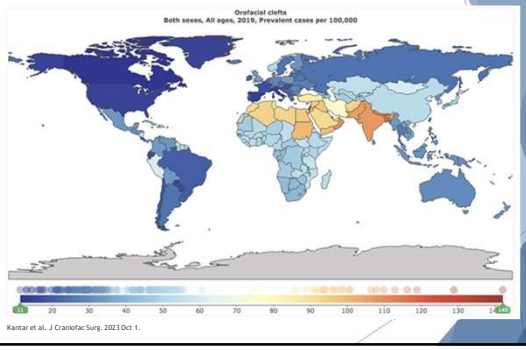
Prevalence of Orofacial Clefts



Kantar et al. J Craniofac Surg. 2023 Oct 1.

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Heroes, Villains, or Antagonists?

William and Kathy Magee

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Heroes, Villains, or Antagonists?

Charles Wang
Late former owner of NY islanders and Chairman of Computer Associates

Brian Mullaney - Advertising executive

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A Merger Called Off

- Spring 2011
- Charles Wang proposed merger between Operation Smile and Smile Train
  - Fire all Smile Train senior executives
  - Wang would oversee Smile Train's $160 million in assets
  - Operation Smile founders William and Kathy Magee would have lifetime tenure at new organization
- Merger eventually fell through
- Weren't these organizations the same?

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The Beginning

- 1981 - Bill and Kathy Magee travel to Philippines to perform cleft lip and palate surgery
  - 40 procedures for 300 patients
- Grassroots fundraising in Norfolk Virginia
- Gradual expansion to other countries in Southeast Asia and then Africa
- Typically, Mission site coordinator, plastic surgeon, anesthesiologist, pediatrician, PICU specialist, Perioperative RNs, Speech pathologists, dentists, orthodontists

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Scale

- Mr. Mullaney joined the Operation Smile board and accompanied many missions
- Late 1980s and 1990s
- 1-2 million unrepaired cleft lip and palate worldwide
  - Bridge gap in 10 years
  - ~100,000 surgeries per year
  - $1000 per surgery, 10,000 lbs of equipment, 40 medical volunteers per trip
- 2-week mission → 100 surgeries
  - 100,000 surgeries annually requires 1000 surgical teams
    - 40,000 volunteers
    - $100 million per year
    - At the time, raising ~$3 million annually, 23 missions, 300 volunteers

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Dependence

- Filipino surgeons had limited opportunity to perform cleft surgery
  - Operation Smile surgeries were free
  - Parents preferred American surgeons
- What are the secondary effects of the work?

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Radical Reframing

- Start with what's strong, not with what's wrong
- Bac Thai, Vietnam
- What happens when Operation Smile teams aren't here?
  - Perform cleft lip and palate surgery
- Are they any good?
  - They might be better
- Vietnamese surgeons made $300-600 monthly
- Nurses made $25/month

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A Schism

- National press of 2 patient deaths on Operation Smile mission in China in early 1990s
- Charles Wang and Brian Mullaney leave Operation Smile board

- Smile Train is born
- Initial idea to travel through China on a train training staff and leaving equipment behind along the way
  - Train as many surgeons, anesthesiologists and nurses as possible

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A Fundraiser to Remember

- Ann Curry, NYC journalist hosted
  - Typical speakers and discussion of Cleft
  - Discussed a patient named Wang Li from China
    - Cleft prevented her from attending school
  - Dinner
  - During dinner Chinese surgeons performed repair of Wang's cleft,
    - "Let's check in with Wang in China."
    - Now that you can go to school, what do you want to be when you grow up
    - "I want to be a doctor."

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Operation Smile

- Largest volunteer based medical nonprofit in the world
- Active in 40 countries
- $115 million in assets
- 420,000 Operations since 1981

- 1990 George H.W. Bush President's Volunteer Action Award
- UNICEF, Save the Children and the American Heart Association International Training Organization 2005

Operation Smile

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Smile Train

- Founded in 1999
- Net Assets - $329 million
- 2,000,000 surgeries since 1999

- 2018 World Healthcare NGO of the year
- 2024 Mid Sized Nonprofit of the year

SmileTrain

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Models

Direct Care
"Give a person a fish."

Train the trainer
"Teach a person to fish…"

Accompaniment
"Give them a fishing rod and some bait."

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Ethical frameworks

- "Seven Sins of Humanitarian Medicine" article (PMID: 20063094)

- **The Brocher Declaration**: *Global Health Partnerships and the Brocher Declaration: Principles for Ethical Short-Term Engagements in Global Health* (PMID 35646612)

- **The ACC practice guideline/position paper**: *Ethical Obligations Regarding Short-Term Global Health Clinical Experiences: An American College of Physicians Position Paper* (PMID 29582076)

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Seven Sins of Humanitarian Medicine

1. Leaving a mess behind
2. Failing to match technology to local needs and abilities
3. Failing of non-governmental organizations (NGO's) to cooperate and help each other, and and accept help from military organizations
4. Failing to have a follow-up plan
5. Allowing politics, training, or other distracting goals to trump service, while representing the mission as "service"
6. Going where we are not wanted, or needed and/or being poor guests
7. Doing the right thing for the wrong reason

Welling et al Seven sins of humanitarian medicine. World J Surg. 2010 Mar;34(3):466-70.

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What is sustainable partnership?

- Locally identified priorities
- Bidirectional learning
- Long-term commitment
- Mutual benefit
- Accountability

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Some of the work we've been involved with?

- Navajo Nation
- Ethiopia
- Guatemala
- Bolivia

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HEAL Initiative

Health, Equity, Action & Leadership

- 2-year fellowship
- 25-30 fellows per year
  - Humility
  - Solidarity
  - Immersion
  - Relentless Incrementalism

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"If you have come here to help me, you are wasting your time. But if you have come because your liberation is bound up with mine, then let us work together."

-Lilla Watson
Murri Activist

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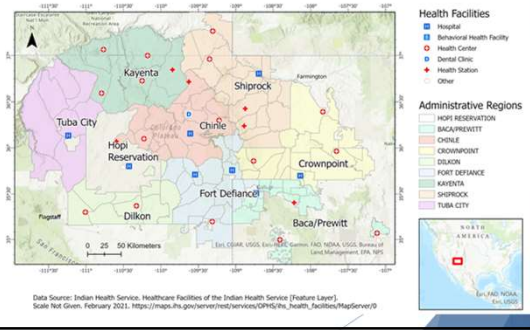
Health Care Services in the Navajo Nation



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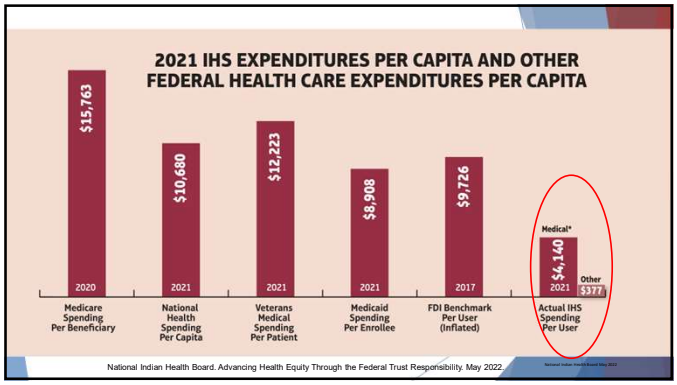

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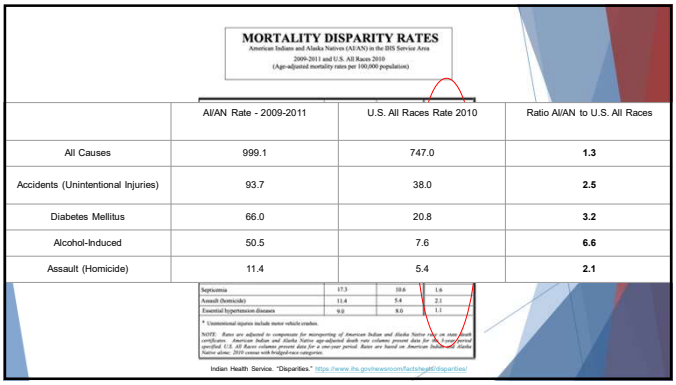

MORTALITY DISPARITY RATES

American Indians and Alaska Natives (AI/AN) in the IHS Service Area
2009-2011 and U.S. All Races 2010
(Age-adjusted mortality rates per 100,000 population)

	AI/AN Rate - 2009-2011	U.S. All Races Rate 2010	Ratio AI/AN to U.S. All Races
All Causes	999.1	747.0	**1.3**
Accidents (Unintentional Injuries)	93.7	38.0	**2.5**
Diabetes Mellitus	66.0	20.8	**3.2**
Alcohol-Induced	50.5	7.6	**6.6**
Assault (Homicide)	11.4	5.4	**2.1**

Indian Health Service. "Disparities." https://www.ihs.gov/newsroom/factsheets/disparities/

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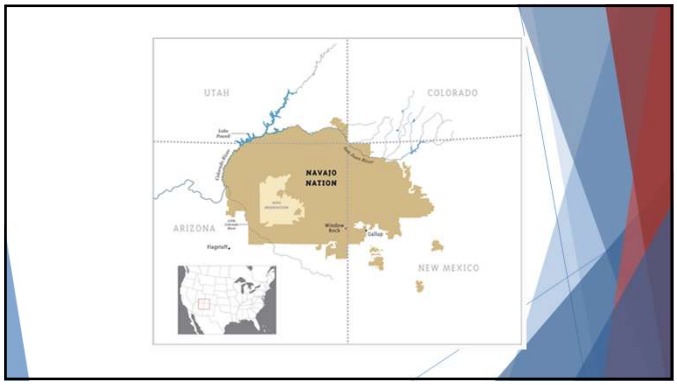

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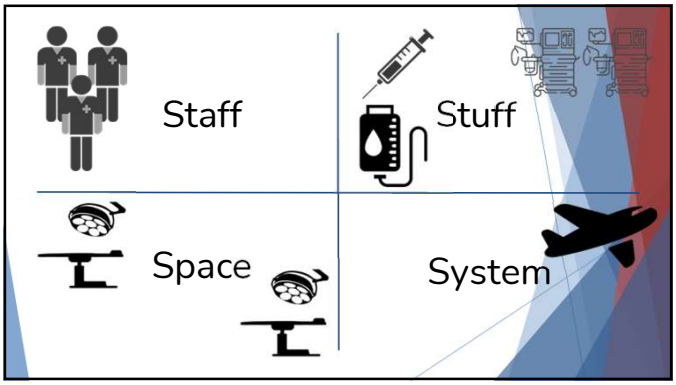

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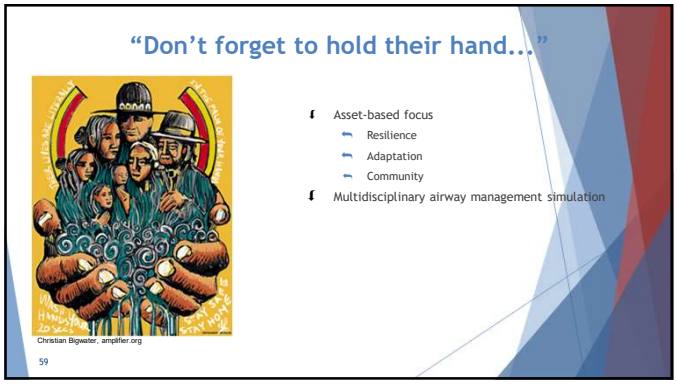

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Staff

Stuff

Space

System

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"This is a hospital for *all* Malawians..."

- Socialized scarcity
- Accompaniment
- Surgical Safety Checklist Implementation
- Continuing Professional Development/Journal Clubs

Alexandria Hall, amplifier.org

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Strengths and Weaknesses of the Program

- Strengths
  - Community focused and community driven
  - Equal representation amongst fellows
  - Long term commitment
- Weaknesses
  - Complex logistics
  - Recruitment challenges
  - Limitations of affiliation with academic institution

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ANSCHUTZ MEDICAL CAMPUS

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Residency Rotation

- University of Colorado Residency Rotation in Chinle, AZ
- Improve exposure to rural, underserved anesthesia care

- Resilience
- Adaptability
- Ingenuity
- Advocacy
- Recruitment

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Pediatric Spine Surgery in Ethiopia

- Population: 130 million people
- Population under 18 year old: ~60 million
- Estimated 50,000 patients with severe scoliosis
- No center offering pediatric spine surgery
  - Life altering deformity
  - Progression until death

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cure INTERNATIONAL CHILDREN'S HOSPITALS

Hospital Locations

- Ethiopia
- Kenya
- Malawi
- Niger
- Philippines
- Uganda
- Zambia
- Zimbabwe

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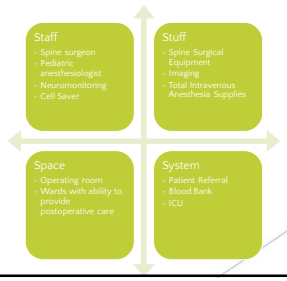
What Do you Need to Do Scoliosis Surgery in Ethiopia?



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Money and Local Champions

- **Tim Tebow Foundation**
- **CURE Hospital Network**
- **Dr. Tim Nunn - Orthopedic Surgeon**
- **Dr. Tihut Teshome - Pediatric Anesthesiologist**
- Needs
  - Neuromonitoring Specialists
  - Spine Surgeons
  - Peds Anesthesiology Support

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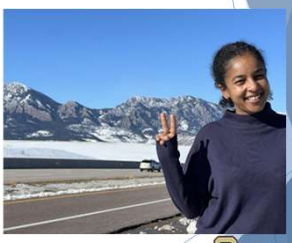
The Journey So Far

- **2 years**
- **120 cases and counting**
- 2 Externships by Dr. Tihut Teshome
  - 1 month at Children's Hospital Philadelphia
  - 1 month at University of Colorado and Children's Hospital Colorado
- **L'Chaim Prize for Outstanding Christian Medical Mission Service**



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Strengths and Weaknesses of the Program

- Strengths
  - Empowered host country defines needs
  - Sustainable program focused on capacity building
  - Successful matching of technology to local needs
- Weaknesses
  - Dependent on visiting spine surgeons
  - Limitations on local medication availability

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Creating Sustainable Global Anesthesia Programs

Guatemala and Bolivia

1. **Connection**, engage local partners
2. Co-identify **priorities**
3. Shared **solutions** aligned with existing systems
4. Collaborative **plan**
   1. Start small then scale
5. Accountability, measure **impact**
6. Long-term **partnership**

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Roadmap to a Sustainable Global Anesthesia Program

(With Strong Local Partnership)

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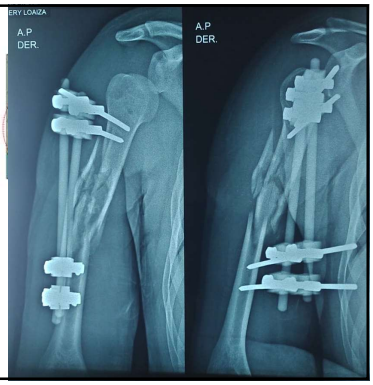
Guatemala

- Connection
- Priority
- Challenges
- Solution
- Plan



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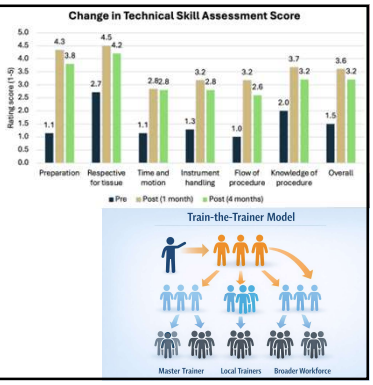
Measuring impact

- 2 years since implementation
  - Over 300 blocks
  - 97% success rate
- Enhanced patient care
- Reduced cost & resource consumption
- Local expertise
- Expansion of capabilities



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Future opportunities

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Bolivia

- Integration of short-term campaign with capacity building
- Identify gaps
- Innovative solutions
- Follow-up

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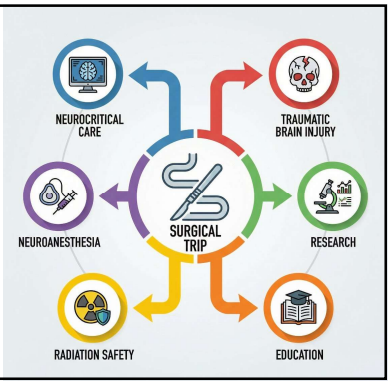
Bolivia

Long-term partnerships & impact



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"Don't just do something, stand there."

-anonymous

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Why participate in global health?

- Address needs & care for underserved populations
- Professional growth as a clinician
- Developing adaptability and leadership
- Intellectual and professional fulfillment
- Reconnecting with purpose and meaning in medicine
- Personal growth and humility

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How can I get involved?

Global health ≠ one path

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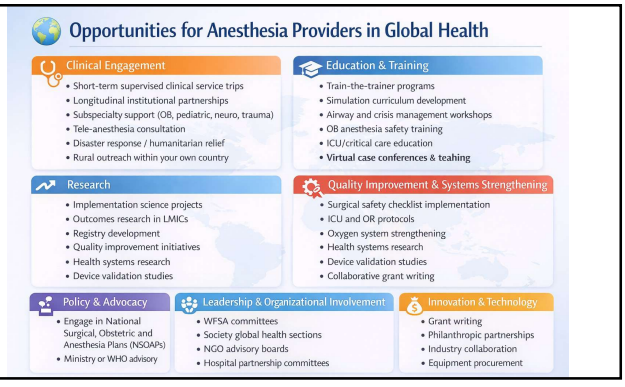

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Opportunities for clinical engagement

- NGOs and volunteer-based programs
  - Health Volunteers Oversees
  - HealthCareVolunteer.com
  - Doctors Without Borders
  - Operation Smile
  - One World Surgery
- Academic collaborations/initiatives
- Professional and specialty organizations
  - ASA, AANA, WFSA, Society interest groups
- Global surgery networks
- Fellowship, certificate, or training programs

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Time commitment

Low Commitment	*Moderate*	*High / Career-Focused*
Donate	Teach virtually	Lead a bilateral program
Volunteer trip	Research collaborator	Funded global health PI
Society member	QI project	Policy advisor

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Fellowships in Global Anesthesia?

- Boston Children's Hospital
- Dalhousie University
- Duke University
- Stanford University
- University of California San Diego
- University of California San Francisco
- University of Colorado
- University of Ottawa
- University of North Carolina
- University of Washington
- Vanderbilt University
- Weil Cornell University
- Lifebox Safe Surgery and Anesthesia
- Paul Farmer Global Surgery Fellowship

McGoldrick et al. *ASA Newsletter*. 2015;79 (3):30-49.
Globalanesthesia.org

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I Don't Have All the Time in the World…

"Should I do a 1-2 week trip?"

1. Is there a local partner?
2. What is your role?
3. Who is paying and where is the money going?
4. What happens when you leave?

Capacity Building from Home

- Online Resources
- Online Lectures
- Donations

Butler et al. *J Pediatric Surg*. 2018 Apr;53(4):828-836.

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Remote teaching

- Resurge International
  - Reach out to dora@resurge.org
- Partner with CU or other Academic institutions
- Society programs (ASA, AANA)

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Donations

CU Global Anesthesia Program

https://medschool.cuanschutz.edu/anesthesiology/education/global-health

Initiatives:

Medical supplies/equipment

Ultrasounds, pulse oximeters, needles, medications, monitors, airway supplies

Training programs

Observerships for foreign doctors

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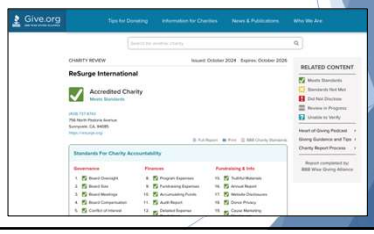
How to "vet" charitable programs?

- Charity Navigator
- Give.org



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The Way Forward

- Proposed standardized anesthesiology health equity competencies
  - Basic – **All** anesthesiology residents
  - Intermediate – Interested anesthesiology residents
  - Advanced – **Fellows** and faculty
- Look inward before you look outward
  - What is your institution already doing?
- Effective Partnership
  - Bidirectional, empowered host community sets agenda
  - Capacity building focus
  - Humility, respect, and accountability

Anesthesiology
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Wollner et al. *Canadian Journal of Anesthesia.* 2020;67(8):924-935.

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How to make long-term impact during short term trips?

- **Go as a Partner — Not a Provider**
  - Work within an existing local program
  - Align with local priorities
  - Meet with leadership before clinical work
  - Ask: *"How can this visit support your long-term goals?"*
- **Prepare before you arrive**
  - Understand local scope of practice
  - Review resource constraints
  - Coordinate educational goals in advance
  - Bring only requested equipment

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How to make long-term impact during short term trips?

- **Focus on teaching, not doing**
  - Bedside teaching during cases
  - Case-based discussions
  - Airway/crisis simulations
  - Train-the-trainer sessions
  - Leave behind structured teaching materials
- **Strengthen systems not just individuals**
  - Co-develop protocols or checklists
  - Support data collection efforts
  - Identify workflow improvements
  - Help refine QI initiatives

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How to make long-term impact during short term trips?

- **Ensure continuity after you leave**
  - Schedule virtual follow-ups
  - Continue case discussions remotely
  - Support grant writing or research
  - Share publications and co-author work
- **Measure what changed**
  - What knowledge was transferred?
  - What processes improved?
  - What skills were retained?
  - What will continue 6-12 months later?

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How to prepare for global health trip?

- Know your context
- Understand your resources
- Identify your role
- Ask questions
- Set priorities in collaboration with local champions

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Cultural humility

- Lifelong learning
- Respect for local customs, laws, standards
- Power dynamic awareness
- Avoid "saviorism"
- Work *with*, not *for*

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Resources for global health work

- **Pre-Departure training**
  - Americares (DisasterReady & Medical Outreach Resources)
  - Consortium of Universities for Global Health (CUGH)
  - AMSA Pre-Departure Ethics Curriculum
  - AAFP Global Health Pre-Travel Training Guide
- **Clinical & educational resources**
  - WFSA Virtual Anesthesia Textbook
  - WHO Surgical Safety Checklist
  - Global Health Media Project
  - Disease Control Priorities (DCP3)
- **Online courses & training platforms**
  - Global Health Learning Center (USAID)
  - CDC TRAIN
  - Pacific Open Learning Health Net (POLHN)
- **Safety, travel & logistics**
  - CDC & WHO Travel Health Guidance
  - U.S. Department of State STEP program
  - Global Healthcare Volunteer Handbooks
- **Research & implementation support**
  - The Global Health Network
  - WHO Global Health Observatory
- **OpenAnesthesia**

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References

1. Debas HT, Donkor P, Gawande A, Jamison DT, Kruk ME, Mock CN, eds. *Essential Surgery: Disease Control Priorities, Third Edition (Volume 1).* Washington (DC): The World Bank; 2015.
2. Kantar RS, Hamdan US, Muller JN, Hemal K, Younan RA, Haddad M, Melhem AM, Don Griot JPW, Breugem CC, Mokdad AH. Global Prevalence and Burden of Orofacial Clefts: A Systematic Analysis for the Global Burden of Disease Study 2019. J Craniofac Surg. 2023 Oct 1;34(7):2012-2015. doi: 10.1097/SCS.0000000000009591. Epub 2023 Aug 15. PMID: 37582289; PMCID: PMC10592431.
3. Kempthorne P, Morriss WW, Mellin-Olsen J, Gore-Booth J. The WFSA Global Anesthesia Workforce Survey. *Anesth Analg.* 2017;125(3):981-990.
4. Magee, W. P. (2010). Evolution of a Sustainable Surgical Delivery Model. Journal of Craniofacial Surgery, 21 (5), 1321-1326. doi: 10.1097/SCS.0b013e3181ef2a6c.
5. Meara J.G., Leather A.J., Hagander L., Alkire B.C., Alonso N., Ameh E.A., et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Surgery.* 2015;158:3-6.
6. Prasad S, Kamaara E, Compton B. From short-term engagements to meaningful and equitable global health partnerships. PLOS Glob Public Health. 2024 Dec 12;4(12):e0004011. doi: 10.1371/journal.pgph.0004011. PMID: 39666685; PMCID: PMC11637262.
7. Quene TM, Bust L, Louw J, Mwandri M, Chu KM. Global surgery is an essential component of global health. Surgeon. 2022;20(1):9-15.
8. The Second Global Patient Safety Challenge: Safe Surgery Saves Lives. WHO World Alliance for Patient Safety. Published 2008. Available at https://iris.who.int/bitstream/handle/10665/70080/WHO_IER_PSP_2008.07_eng.pdf;jsessionid=3CD3A3E843DB45998B44AF3EA61CD37A0?sequence=1. Accessed 10/1/2023.
9. Weiser TG, Regenbogen SE, Thompson KD, Haynes AB, Lipsitz SR, Berry WR, et al. An estimation of the global volume of surgery: a modelling strategy based on available data. *Lancet* 2008;372:139-44.
10. Welling DR, Ryan JM, Burris DG, Rich NM. Seven sins of humanitarian medicine. World J Surg. 2010 Mar;34(3):466-70. doi: 10.1007/s00268-009-0373-z. PMID: 20063094.
11. Wollner, E., Law, T., Sullivan, K. et al. Why every anesthesia trainee should receive global health equity education. Can J Anesth/J Can Anesth 67, 924–935 (2020). https://doi.org/10.1007/s12630-020-01715-3.
12. Zbar, R. I., Rai, S. M. & Dingman, D. L. (2000). Establishing Cleft Malformation Surgery in Developing Nations: A Model for the New Millennium. Plastic and Reconstructive Surgery, 106 (4), 886-889.

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Thank you!

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