Global Health Program

Annual Report 2016

Boston Children's Hospital

Until every child is well™



Boston Children's Hospital
Global Health Program

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Director's **Letter**

To be excellent is to stand out. But to be the best is to join in, sharing a wealth of talent and resources to improve child health on a global scale. Boston Children's Hospital, the leader in pediatric healthcare, strives every day to live up to its mantra: *Until Every Child is Well.* For our hospital team good is never enough and the commitment to global child health runs deep. For decades, Boston Children's doctors, nurses and staff have been working tirelessly to reach all corners of the globe, implementing impactful programming to improve the quality of healthcare for children.



To reach every child, Boston Children's Hospital Global Health Program takes a novel approach to global health: we create project teams comprised of experts from the institution, and we have a dedicated global health workforce through our fellowship programs and efficient operations team that provides locally tailored, nimble solutions to child health problems. We deploy our forces in partnership with country advocates, in-country universities or health facilities whose goal is to address a specific problem or to achieve better child health broadly. We develop solutions together and gather data to assess impact and outcomes and refine solutions in real time so we can adapt to new challenges on the ground as we work creating sustainable change.

The Global Health Program's goal is simple: to improve child health globally by creating and fostering an environment in which Boston Children's Hospital is able to support global initiatives that are problem focused, solution driven and locally owned.

In this report, you will see some of the high-impact ways we have worked to make a difference in child health globally. Despite this progress there is still work to be done, and we at Boston Children's Global Health Program will continue to offer creative and innovative solutions, *Until Every Child is Well,* around the world.

Michelle Niescierenko, MD, MPH
Director, Global Health Program

Our goal is simple: to improve child health globally by creating and fostering an environment in which Boston Children's Hospital is able to support global initiatives that are problem focused, solution driven and locally owned.

Photo: GHP Director, Dr. Michelle Niescierenko (right), tuktuk'ing to Laos Friends Hospital for Children with Disty Pearson (center) and Laos friend and guide Peak (left).

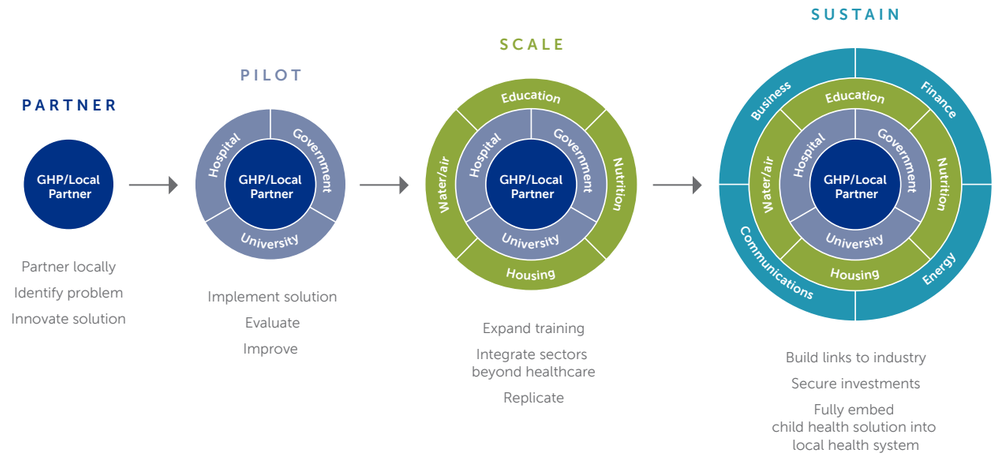
Introduction

The Global Health Program was created in 2014 to centralize and expand Boston Children's Hospital's global health efforts, to enhance safety for the work being done and to advance the Hospital's mission globally. The Global Health Program has enabled members of the Boston Children's Hospital's community to develop and drive forward global health care, education and research in an organized, impactful and Boston Children's mission-driven way. Additionally, the Global Health Program has helped Boston Children's Hospital to raise its profile and strengthen its position as a leader among other academic and non-governmental institutions in the global arena of pediatric health.

Care for children can be complex, with both physical and mental needs. Globally, as in Boston, providing quality healthcare for a child requires unique considerations for their environment, their care delivery needs and long-term vision for their development.

In 2016, the Global Health Program made significant strides in supporting the Boston Children's Hospital's global health work. The Global Health Program's 2016 initiatives, including **fellowships**, education programs, research opportunities and grants, helped Boston Children's Hospital share and promote pediatric health ideas and best practices globally.

Steps to **Sustainable Solutions**



Boston Children's
Global Health Program

Focuses on the whole child.

Rather than focus on a single disease, we address the broad spectrum of children's health. Our emphasis is on meeting growing children's changing needs in innovative, multi-sectorial and sustainable ways.

Brings expertise and, most importantly, transfers it.

Our solution-driven approach equips local partners to work independently. From day one, we are moving toward our exit strategy. This model allows us to direct the majority of funds to the programming, not our own operations.

Delivers sustainable solutions.

We partner with local caregivers, businesses and governments to overcome political and infrastructure barriers. We seek creative long-term solutions that can blossom on the unpredictable landscapes of developing nations. Clean water, nutrition, education—so many factors influence a child's healthy development. We seek to engage all who can contribute to solving these challenges.

At a Glance
2016

Jan
- GH Council Annual Meeting

Feb
- Nursing Forum

Mar
- Grants Awarded
  Spring Cycle

Apr
- TravelSafe Implemented
  695 employees enrolled

May
- GH Council Networking Event
- Nursing Forum

Jun
- Fellowship Graduation

Jul
- Orientation of New Global Pediatric & Nursing Fellows
- Global Pharmacy Fellowship launched

Aug
- GH Council Networking Event
- Global Pediatric Clinical Skills Week (CME course)
  57 participants

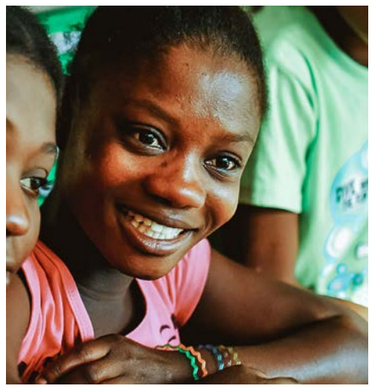
Sep
- Global Entry
  180 employees enrolled
- Global Health Research Day (CME/CNE course)
  50 participants
- BostonGH.org website & calendar launched

Oct
- Anesthesia for Global Outreach Course
- Grants Awarded
  Fall Cycle

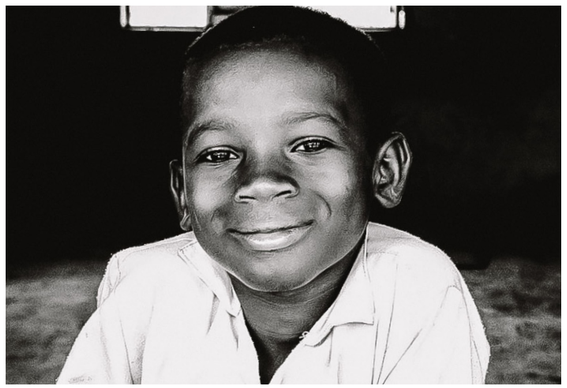
Nov
- Nursing Forum

Dec









Where We **Work**

- Armenia
- Bangladesh
- Brazil
- Cape Verde
- Chile
- China
- Colombia
- Dominican Republic
- Egypt
- Ethiopia
- Georgia
- Ghana
- Guatemala
- Haiti
- Honduras
- India
- Jordan
- Kenya
- Laos
- Liberia
- Madagascar
- Malawi
- Mexico
- Mozambique
- Myanmar
- Nepal
- Pakistan
- Russia
- Rwanda
- South Africa
- Syria
- Tanzania
- Thailand
- Turkey
- Uganda
- United States of America
- Vietnam
- Zambia
- Zimbabwe





Grants

The Global Health Program actively supports the global health work of Boston Children's Hospital faculty, staff and trainees that aligns with the strategic vision of the program and the hospital.

Since 2014, the Global Health Program has awarded 62 grants totaling over **$250,000**.

in 2016

22
grants awarded to BCH faculty, nurses, residents & fellows

$73,500
dollars in grant funding awarded

14
countries

2016 Project Grant Recipients

Project grants are available to faculty, staff and trainees for the implementation of global health related projects, with an emphasis on projects with the potential to generate pilot data for further research, and those that develop or maintain long-term global health partnerships with a focus on sustainability.

Recipient(s)	Field Site(s)	Project Title
Emma Cardeli, PhD	Jordan	Integrating Mental Health Psychosocial Services into Rehabilitative Care: Understanding the Experiences and Psychosocial Functioning of War-Wounded Syrian Refugee Youth
Collin May, MD	Haiti	Boston Children's Hospital Pediatric Orthopedic Program (BCH-POP) addressing Birth Defects
Archana Patel, MD, MPH	Zambia	Pediatric Epilepsy Training for Clinical Officers
Dan Schwartz, MD, MPH	Nepal	Implementation of a Village-based Group Pediatric Care Program in Rural Nepal
Saurabh Saluja, MD, MPP, Gabriel Toma, MD, & Yihan Lin, MD, MPH	Zambia, Cape Verde, Brazil, & Rwanda	Implementation and Measurement of Global Surgery Indicators in Multiple Countries
Liliana Zelaya, RN, BSN, CCRN	Guatemala	Creating a Culture of Safety: Medication Adverse Event Tracking at a Pediatric Oncology Hospital
Jane Hopkins Walsh, APN, PNP, MSN	Honduras	Creation of a Shared Care Program for Children
Lucy Marcil, MD, MPH, Cynthia Schreiner, MD, & Tracy Seimears, MD	Kenya	Neonatal Capacity Building in Peri-Urban Kenya

GRANT HIGHLIGHT

Improving Epilepsy Care in Zambia

Currently, Zambia only has one child neurologist for the entire country. This contributes to poor understanding of epilepsy and seizure management in a setting with limited treatment, and poor utilization of the available treatment options.

Through a project grant, Pediatric Neurologist Dr. Archana Patel worked with local clinicians to create and use diagnostic tools to improve the capacity on the ground to identify and manage seizures and epilepsy. Her work expanded from Tanzania to Zambia as she built a clinical and research partnership in Lusaka, with a focus on capacity building through training of local residents and pediatricians. This has included Dr. Manoj Mathews, a Zambian pediatrician, with keen interest but no specialized training in neurology who was able to participate in a Pediatric Neurology Observership for 6 weeks at Boston Children's Hospital, thanks to an observership grant provided by the Global Health Program. He has since returned to Zambia to continue with the team, identifying and treating epilepsy in local clinics.

Dr. Patel recently received additional funding through the Global Health Program to expand on her work in Zambia. In this next project stage, she will directly train clinical officers in order to better deliver pediatric epilepsy care at the front lines.

GRANT HIGHLIGHT

Growth from Seed Grants

A number of the project and travel grant recipients used this initial seed funding, provided by the Global Health Program, to demonstrate proof of concept. This has led to additional external funding which expands the reach of their work.

Dr. John Meara, the Plastic Surgeon-in-Chief at Boston Children's Hospital and the Director of the Program in Global Surgery and Social Change (PGSSC), was awarded one of the first Global Health Program project grants in the amount of $10,000. This initial support helped to implement the Lancet Commission on Global Surgery's (LCoGS) surgical priorities. This investment from the Global Health Program led to subsequent funding, including a $75,000 grant from the HMS Center for Global Health Delivery in Dubai.

A local private donor with interest in developing healthcare in South East Asia also saw the opportunity to support this partnership and was able to generously donate $500,000 for PGSSC's work with the Association of Rural Surgeons in India (ARSI) to identify areas in India where surgical care is lacking and there are opportunities for system improvement. The team is currently working to evaluate innovative approaches to addressing the anesthesia workforce shortage in rural India and is engaging in policy-level research around blood banking and blood availability.

Additionally, this project has been able to provide support by:

- Providing *Champions of Rural Surgery* awards to Indian counterparts who are long-time champions of rural surgical care
- Establishing a locally-driven center, *Ilogs India*, that will advance surgical system development by implementing the goals outlining world-wide surgical priorities from the *Lancet Commission on Global Surgery 2030*
- Supporting the annual Association of Rural Surgeons India-meeting in Kullu, India
- Surveying rural surgical providers on access to blood services to identify barriers to blood availability
- Working with World Health Organization to become one of 700 recognized *WHO Collaborating Centers*
- Leveraging funding support to obtain an external grant to study innovative approaches in increasing safe provision of spinal anesthesia



2016 Travel Grant Recipients

Travel grants are available to faculty, fellows, nurses and professional staff who are traveling to perform global health work in the form of direct clinical care, education, mentorship, or to participate as part of a larger program. Priority is given to applicants who are traveling to help develop long-term partner projects, programs focused on sustainability, or for travel to Boston Children's long-term partner sites.

Recipient(s)	Field Site	Project Title
Anne Hansen, MD, MPH	Rwanda	Electricity-free Infant Warmer for Newborn Thermoregulation
Meri Clare, BSN, RN & Anna Gluckman, BSN, RN, CCRN	Haiti	Neonatal Critical Care Nursing Education Program
Rameez Qudsi, MD	Pakistan	Access to Care for Pediatric Orthopaedics in Karachi, Pakistan
Ryan Hodgeman, BS	Zambia	Lusaka Neurology Clinical Case Conference in Zambia
Dennis Rosen, MD	Mexico	Helping Babies Breathe and Children Thrive
Briony Varda, MD & Bryan Sack, MD	Cape Verde	Pediatric Urology Needs Assessment
Deborah O'Dowd, RN, CCRN	Haiti	Neonatal Critical Care Nursing Education Program





Left photo: Dr. Anne Hansen's infant warmer

Right photo: Casting to correct clubfoot by the orthopedic team

2016 Observership Grant Recipients

Observership grants are a way to partner in a bidirectional way, supporting international colleagues who will benefit from a defined clinical, educational or research experience at Boston Children's Hospital. Resource limitations experienced by partners would normally prevent these promising clinicians and researchers from traveling to Boston Children's; these observership grants enable clinicians to participate in this valuable learning experience.

Observership grant awardees receive $2,500 in funding to use towards housing and airfare. With this support, they are able to take the skills they learn here back to their countries.

Recipient	Nationality	Partner Faculty/Fellow, BCH Division
Dr. Manoj Mathews	Zambia	Archana Patel, Neurology
Dr. Gladys Michelle Alejandra Mendez Aceituno	Guatemala	Asya Agulnik, Critical Care
Dr. Aaron Gasore	Rwanda	Greg Licameli, Otorhinolaryngology
Dr. Jean Paul Rukabyarwema	Rwanda	Kim Wilson, General Pediatrics
Dr. Kanagasabi Udhayashankar	Liberia	Michelle Niescierenko, Emergency Medicine
Dr. Rodrick Richard Kisenge	Tanzania	Christopher Duggan, Nutrition





Left photo: Jurriaan Peters, Leah Wibecan, Manoj Mathews (observer), and Archana Patel

Right photo: Kim Wilson and Jean Paul Rukabyarwema (observer)



Education & Training

Education is a core priority of the Global Health Program; education is what drives sustainable global health initiatives.

Education as a strategy to improve global health falls into two categories:

- Boston Based Trainings & Courses
- Training & Education in the Field

in 2016

21
seminars hosted by the GHP

100+
CME course participants

8
clinicians teaching at Laos partner site

Boston Based Trainings & Courses

The Global Health Program's educational opportunities in Boston are designed for Boston Children's community members who wish to understand a global context and gain the skills necessary for global health. The programs are open to all Boston Children's community members and learners including medical students, nurses, professional staff, residents, fellows and attendings.

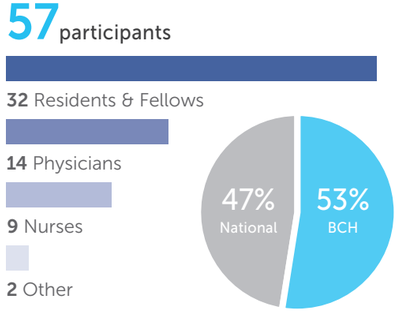
In 2016, these offers were expanded to include two national continuing medical education events, the Global Pediatric Clinical Skills Week and Global Health Research Day, for pediatric global health professionals.

Clinical Skills Week Aug 1-5, 2016

The Global Pediatric Clinical Skills Week focuses intensely on key topics for pediatric clinicians to help prepare for clinical work in resource limited and developing settings.

The week includes:

- Helping Babies Breathe Course
- Ultrasound Course
- Clinical Core Topics in Global Health
- Trauma & Emergencies Workshop
- Sedation Workshop
- Lines, Tubes & Wounds Workshop
- Medication Safety Workshop



Bi-weekly Seminar Series

The Global Health Program sponsors a bi-weekly seminar series, which is open to the Boston Children's Hospital community. These seminars are intended to increase awareness and motivate discussion on child health in low-resource settings across disciplines within the institution.

Topics have included:

- Public Speaking
- Refugee & Immigrant Health
- Quality Improvement
- Leadership Skills
- Maternal Immunization
- Post-Disaster Mental Health
- Management of HIV
- Early Childhood Development
- Nursing Oncology
- Supply Chains
- Neonatal Care
- Adolescent Health













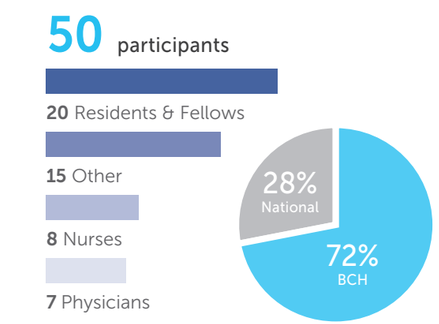
Clockwise from top left: Lines, Tubes & Wounds Workshop; Ultrasound Course; Helping Babies Breathe; Pediatric Sedation Simulation Workshop; Trauma & Emergencies Workshop

Research Day Sept 28, 2016

Global Health Research Day is devoted to helping fellows and junior faculty gain skills and knowledge necessary to conduct global health research and improve monitoring and evaluation plans.

The day features workshops on:

- Ethics & Institutional Review Boards
- Quality Improvement
- Data Collection & Management
- Needs Assessments
- Medical Education Evaluation







Anesthesia for Global Outreach Course Oct 7-9, 2016

The Anesthesia for Global Outreach Course is an international course hosted in the U.S. for the first time by the Department of Anesthesiology, Perioperative and Pain Medicine. This three-day course is designed to assist anesthesia providers traveling to low-resource environments for service or capacity development in anesthesia and critical care. Through a series of seminars, simulation sessions, and small group exercises, course participants had the opportunity to consider intellectual, technical, psychological, and ethical aspects of outreach anesthesia work in conditions that they are unlikely to have encountered in their training or daily practice.





Education & Trainings in the Field

In addition to Boston-based education initiatives, the Global Health Program focuses on the transfer of knowledge and skills to our global counterparts as a key method to ensure sustainable impact. Boston Children's clinicians mentor peers, develop and deliver formal medical education for students, nurses and residents, and conduct trainings, workshops and courses abroad for healthcare workers in their own communities. These skills are taught with sustainability in mind and help transfer the knowledge necessary to improve health care delivery in communities around the globe.

Neonatal & Pediatric Intensive Care in Haiti

In Haiti, children are dying in hospitals due, in part, to lack of advanced, critical care skills. Meanwhile, Haitian nurses have no opportunities to learn these necessary skills. To address this problem, three Boston Children's nurses, Michelle LaBrecque, Anna Gluckman, and Alexis Schmid (a Global Nursing Fellow), developed a six-month certificate training course for Haitian nurses that combines teaching with bedside care mentorship in Neonatal and Pediatric Intensive Care Units.

To facilitate this training, 41 BCH nurses, 1 physician and 1 pharmacist joined together to teach 2,400 lecture hours and 1,200 bedside hours in multidisciplinary skills necessary to improve critical care to 46 Haitian nurse leaders from 11 Haitian hospitals. Because each Haitian nurse cares for, on average, five patients per day (720 patients per nurse per year), this course has the potential to improve patient care for over 18,000 patients; in addition, as the Haitian nurses return to their home hospitals they will facilitate trainings for additional nursing staff, thus increasing exponentially the volume of patients positively impacted by this training.



Global Nursing Fellow, Alexis Schmid (left), in Haiti

PROJECT HIGHLIGHT

Hearts and Minds of Ghana

The *Hearts and Minds of Ghana* partnership stresses education and training in the field and in 2016, celebrated 8 years and 112 total surgeries. Before this program, no heart surgery was available for children in West Africa despite heart disease being the most common birth defect, affecting 1 in 100 babies.

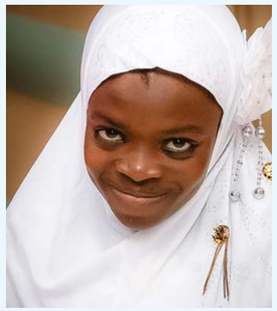
In response to this need, Boston Children's Hospital's Dr. Francis Fynn-Thompson (Cardiothoracic Surgery, originally from Ghana) and nurse Beverly Small (Cardiac ICU and a Global Nursing Fellow) led a team to create a self-sustained cardiac surgery program in Kumasi, Ghana. The strength of this program comes in the mentorship and training of the Ghanaian staff. Since this program started, a local champion surgeon was identified who obtained cardiac surgery training in India and returned to Ghana along with an ICU physician. Over their time partnering in Ghana, the Boston Children's team trained a full Ghanaian staff, including a perfusionist, two operating room nurses, an anesthesiologist, a pharmacist, and a biomedical engineer.

In 2016, the Ghanaian staff independently completed 12 pediatric heart surgeries, fulfilling the goal of creating a sustainable training and capacity building program and helping Ghanaian providers address the issue of heart disease in Ghana moving forward.

Before this program, no heart surgery was available for children in West Africa despite heart disease being the most common birth defect.









Partnering for Pediatric Capacity Development in Laos

In 2016, the Global Health Program created a formal partnership with the Laos Friends Hospital for Children, in Luang Prabang, Laos. This project focuses on mentorship and training in the field supporting Laotian partners. In this first year of partnership, the Global Health Program is able to support 8 clinicians, including pediatric specialists from emergency medicine and cardiology, a physician's assistant, a pharmacist and a nurse, who will each spent a month or more in Laos, working directly on mentoring and training the Laos clinicians who are young medical graduates without specialized pediatric training.

Assessment of Stillbirth & Early Neonatal Deaths in Tanzania

Dr. Mei Elansary partnered with faculty from the University of Dodoma in Tanzania to assess patient and community level causes of maternal and newborn health outcomes using in-depth interviews and focus groups. Her sustainable research approach empowers her local counterparts through capacity building for all their research activities. Young faculty at the university received a 40-hour workshop in qualitative methods, after which they were able to train and supervise local research assistants in undertaking the study interviews with Dr. Elansary's support. A similar approach was used to conduct health facility assessments training University pediatric nursing students who completed the data collection. Together, through community interviews and facility assessments, a better understanding of the needs of mothers and babies was achieved which will allow them to effectively target improvements in neonatal health.



Locally-led focus group in Tanzania



Global Health
Fellowships

The goal of the Global Health Fellowship Program is to train future leaders in global child health and support the development of essential child health services in regions of the world with the greatest need.

The focus is on training a cadre of clinicians who have the skills and long-term commitment necessary to make an impact in improving child health. Additionally, these fellowships advance the work of the Global Health Program by supporting clinicians who want to improve their expertise and multidisciplinary collaboration through program building and partnerships at local, national, and international levels across the domains of clinical quality, education, research and advocacy.

in 2016

16
GH fellows receiving direct support annually from the GHP

23
affiliated GH fellows

7
long-term fellowship partner sites:

Ghana
Guatemala
Haiti
Laos
Myanmar
Rwanda
Tanzania

Global Pediatric Fellowship

The Department of Medicine's Global Pediatric Fellowship is a two-year training program in which fellows rotate in six-month blocks between a field placement in Haiti, Rwanda or Laos and a clinical placement at Boston Children's Hospital and affiliated community sites. The fellowship's focus is on skills training in global health service delivery, including skills in clinical care, medical education, program development, management, evaluation, quality improvement, and implementation of focused research.

Global Nursing Fellowship

The Global Nursing Fellowship is a two-year fellowship with educational opportunities supported by the Global Health Program. The fellowship is open to current Boston Children's Hospital nursing staff and provides structure and protected time for nurses with a desire to develop new skills in global health (such as leadership, project design, and implementation science) to expand their experience and advance their careers in nursing through high-quality and high-impact global health projects.

Global Pharmacy Fellowship

In 2016, the Global Health Program worked with the leadership from Department of Pharmacy to create the Global Pharmacy Fellowship. Similar to the Global Nursing Fellowship, the Global Pharmacy Fellowship provides existing Boston Children's pharmacists with funding and protected time dedicated to global health work.





Left Photo: Global Pharmacy Fellow, Jessica White, teaching a workshop on medication safety
Right photo: Global Nursing Fellow, Marilyn Moonan (far right), during bedside rounds in Myanmar

STORY FROM THE FIELD

Newborn Malnutrition Care

According to the World Health Organization, malnutrition is a contributing factor in 45 percent of pediatric deaths. Many people think caring for malnutrition is just a matter of feeding, but it is much more complex than that. These patients are so fragile: they are at risk for infections, have difficulty maintaining their body temperatures and can develop electrolyte abnormalities. Because all
of their muscles are weak, including their heart, they are at risk for heart failure from fluid overload if given intravenous fluids.

It's difficult to predict which child with severe acute malnutrition will survive and which child won't make it. All too often, I have seen a child on the pediatric ward who seems to be doing well, only to be told the next day at morning report the child had died.

As a Global Pediatric Fellow in Rwanda, one of my most rewarding experiences was with a young patient who was 21 days old. Her mother had not received any prenatal care and had delivered at home —unusual here in Rwanda, where around 90 percent of women give birth in a health facility; these were definite red flags in her history.

At admission, the infant weighed only slightly over two pounds. She was tiny but surprisingly vigorous. This child was a mere 21 days old, her birth weight was unknown and it was also not clear if she had been a full-term infant or was born prematurely. Despite appearing healthy overall, this infant definitely had me on edge. The intern doctor and I made our plan for her care: Kangaroo Mother Care (when the mother holds the infant close to her chest) was provided to warm her and keep her temperature within the normal range, Antibiotics were given to treat any hidden infections, which are common among malnourished children, feedings were scheduled every three hours, day and night, and blood glucose and weight were monitored daily.

The next morning, my first stop at the hospital was the neonatology ward to check on this patient. I was assured by the nurses that she was doing OK. As a Fellow, I split my time working at two different district hospitals in Eastern Rwanda, so I don't always have the continuity of patient care that I like to have, but every time I was on the neonatology ward I would look for her.

She remained strong and free from infection; she tolerated her feeding and began gaining weight. The nurses taught her mother how to care for her. They showed her mother how to prepare the formula properly, how to feed her, and how often, they helped her with Kangaroo Mother Care to keep the baby warm. Eventually, it was time for discharge, and they taught her to watch for danger signs and when to seek medical care.

> Many people think caring for malnutrition is just a matter of feeding, but it is much more complex than that.

A week or so later, I went with a team to a health center about 45 minutes from our hospital supervise at the pediatric development clinic, a novel medical intervention in Rwanda that follows up with high-risk children. The infant was enrolled in this clinic which will monitor her growth and nutrition and screen for any developmental issues.

I was pleased to see that this child was on a sustainable, healthy path.

Jessica Bradford, MD
Global Pediatric Fellow

Paul Farmer Global Surgery Fellowship

The Program in Global Surgery and Social Change

The Program in Global Surgery and Social Change (PGSSC) is a collaborative effort between the Harvard Medical School, Boston Children's Hospital and Partners In Health to advocate for universal access to safe, affordable surgical and anesthesia care globally. The PGSSC hosts the Paul Farmer Global Surgery Fellowship which trains leaders who will further promote surgical care, education, and research pertinent to global surgery. Fellows develop academic, clinical, and administrative skills in global surgery, public health, surgical systems development, and humanitarian aid. Fellows also develop a skill-set necessary to treat conditions common in resource-poor settings.

Global Neurosurgery Fellowship

Dr. Benjamin Warf, a Boston Children's neurosurgeon and Director of Neonatal and Congenital Anomaly Neurosurgery Program, directs a training fellowship in partnership with the International Program to Advance the Treatment of Hydrocephalus (iPATH). The purpose of this fellowship is to prepare neurosurgeons to effectively treat hydrocephalus in developing nations. Global Neurosurgery Fellows spend a minimum of three months receiving intensive hands-on training in Mbale, Uganda.

HIGHLIGHT

Neurosurgery in Uganda

Neurologic diseases are among the most disabling and burdensome conditions affecting low-resourced populations. However, the infrastructure and human resources available to address this growing entity in the poorest countries are inadequate.

Dr. Michael Dewan, Boston Children's Hospital's first Global Neurosurgery Fellow, is working to define the current burden of neurosurgical disease worldwide as well as the surgeon workforce and tools needed to meet this need. Identifying parts of the developing world with the highest neurosurgical volume and the fewest available resources will allow targeted interventions to maximize the number individuals receiving life-saving surgery. He is currently stationed in Uganda working under the guidance of Dr. Warf. Their goal is to enhance and formalize a training program for pediatric neurosurgeons operating in low and middle income countries.





HIGHLIGHT

Improving Surgical Care Globally

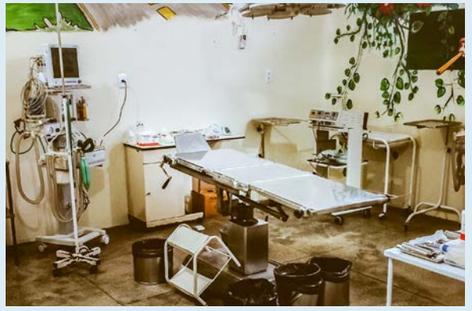
Surgical care is not prioritized on the global health agenda despite accounting for one third of disability adjusted life years. To address this, Boston Children's Hospital's Program in Global Surgery and Social Change (PGSSC) led the Lancet Commission on Global Surgery 2030 to outline world-wide surgical priorities. Using these priorities as a goal, the PGSSC Paul Farmer Global Surgery Fellows have worked to implement surgical care improvement throughout the world.

In Zambia, for example, fellows have spent over 3,000 hours working with the government to assess surgical care provision nationally and to help develop the National Surgical Plan for Zambia which will be rolled out as part of the Zambian Ministry of Health's comprehensive healthcare plan in 2017. In Rwanda, another focus country for the Global Health Program, a major barrier to improving surgical access and outcomes is the lack of research capacity to implement context-appropriate change. To solve this, the PGSSC developed a 120-hour training course to build local research capacity. Fifteen Rwandan surgeons have already completed this training, improving their ability to implement measurable operational changes. With the support provided by the Global Health Program, the next goal of the PGSSC is to help develop Rwanda's national surgical plan.

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Research

Boston Children's Hospital is one of the largest pediatric research institutions in the world. Innovation for better child health globally is a priority for Boston Children's faculty and staff.

Boston Children's community members are involved in research on topics relating to maternal, infant, and child health, non-communicable diseases, infectious diseases, nutrition, child development, and other key child health issues. This research has been instrumental in changing outcomes and strategies for improved global health. Research is conducted in a partnership model working across disciplines in Boston and with partners on the ground to maximize learning and the knowledge generated.

in 2016

50+
employees conducting global health research

95%
departments & divisions conducting global health research

HIGHLIGHT

Improving Nutrition to Improve Health

Diarrhea kills over 760,000 children each year; it is the second leading cause of death for children under the age of five. To address this crisis, for the past 20 years, Dr. Christopher Duggan, has been performing clinical trials in the fields of pediatric nutrition, gastroenterology and global health. In his work as a pediatric gastroenterologist, nutrition physician and Director for the Center for Nutrition, Dr. Duggan evaluates where and how interventions can best improve nutrition and health outcomes for women and children on a large scale in Africa and Asia through research and capacity building with local partners.

Tanzania suffers a high burden of infectious diseases and other illnesses that are generally related to poor underlying nutritional status. Under-nutrition is widespread, with stunting and underweight being very common. Boston Children's Hospital has fostered a long-standing collaboration with the leading academic university in Tanzania: Muhimbili University of Health and Allied Sciences. Led by Dr. Duggan and colleagues, this decades-long relationship has grown even stronger during the last several years through large joint research studies, and programmatic and training activities.

Fostering sustainable research capacity has been a long-term goal of this Boston-Tanzania collaboration. Several Tanzanian colleagues have received training at Harvard through degree programs, short-term non-degree training, and academic sabbaticals. Many interventional studies focus on nutrition, perinatal health outcomes, and infectious diseases. These have included a trial of vitamins among children of HIV-infected women, a trial of zinc and micronutrients in Tanzanian children, and studies on the biomarkers of gut function and predictors of linear growth and neurodevelopment status among young Tanzanian children. These studies address basic and epidemiological aspects of various public health problems, with a focus on nutrition and disease prevention. Additional support has come from the National Institute of Health, the World Health Organization, and the Bill and Melinda Gates Foundation.

HIGHLIGHT

Health System Recovery in Liberia

Dr. Michelle Niescierenko and her partner in Liberia, Dr. Kanagasabai Udhayashankar have worked together for the last 7 years, most recently to provide a comprehensive national response to Ebola and then for health system recovery in all 23 of Liberia's public hospitals. During their work, they assessed community utilization and fear in the wake of Ebola by surveying over 500 community members in 15 counties throughout the country. They found citizens were still fearful of the health system. In response to this, Dr. Niescierenko's team have undertaken work to regain the public's trust and improve the quality of the health system. This work was presented together at the Consortium of Universities for Global Health Conference in April 2016.



A team of Liberian clinicians develop hospital quality improvement teams to improve patient care at the bedside

HIGHLIGHT

Maternal & Child Health

The first 28 days of life are known in the medical community as the newborn period. Each year, over two and a half million babies die in their newborn period. One of the major causes of mortality for these babies is infection. Dr. Grace Chan, from the Department of Medicine is focused on conducting innovative research to increase child survival, particularly during this critical newborn period.

Dr. Chan's research includes a study designed and implemented with funding from a National Institute of Health (NIH) career development award, which follows pregnant women and their newborns in Dhaka, Bangladesh to determine the causes of neonatal infection. Dr. Chan was able to identify that, in certain at-risk populations, intrapartum antibiotics reduced the odds of sepsis by 64%.

Expanding on this work, in collaboration with St. Paul's Millennium Medical University College in Addis Ababa Ethiopia, Dr. Chan is conducting a study with 5,000 pregnant women and their newborns to better understand the causes of neonatal infections, antibiotic resistance, and the association between maternal infection and neonatal infections. Findings from this study will guide antibiotic treatment and management of sick newborns in similar settings.

In addition to research on neonatal infections, Dr. Chan's current projects focus on the use of proven (evidence-based) health care interventions. Kangaroo Mother Care (KMC) is a simple intervention known to reduce up to half of deaths among stable preterm newborns. In Ethiopia, through collaboration with the World Health Organization, the Harvard T. H. Chan School of Public Health and Addis Ababa University, Dr. Chan is investigating the barriers to implementation and strategies to scale-up KMC within the health system.

As part of her commitment to sustainability, Dr. Chan mentors students, residents, fellows, and trainees both in Boston and at field sites. In addition to her research, she has trained healthcare workers on essential newborn care practices in India, Indonesia, Tanzania, and Ethiopia, and has developed and conducted workshops on the use of evidence for policy for Ministries of Health.

Dr. Chan's efforts show how focused research and educational partnerships are fundamental to systematic improvements in child heath.







Incorporating Global Health in

Hospital Initiatives

The Global Health Program supports clinician-led global health focused projects. Throughout the hospital unique solutions are developed every day. Many of these solutions reach international colleagues, scaling the global impact, from across the institution through department and program-wide initiatives.

in 2016

IQIC
has enrolled
surgical teams from

47
sites

22
countries

OPENPediatrics
is used in

2,380
hospitals

145
countries

International Quality Improvement Collaborative

for Congenital Heart Sugery in Developing World Countries

The International Quality Improvement Collaborative for Congenital Heart Surgery in Developing World Countries (IQIC) was formed in 2008 in response to a lack of benchmarking data necessary to evaluate and guide congenital heart surgery programs in the developing world. The IQIC aims to disseminate key knowledge and processes regarding safe perioperative practice, infection reduction, and team-based practice through nurse empowerment – all critical components of successful congenital heart surgery programs.

The mission of IQIC is to reduce mortality and major complications for children undergoing congenital heart surgery in low and middle income country programs. To achieve its goals, the IQIC creates tailored quality improvement strategies to reduce mortality and major complications and employs a telemedicine platform to facilitate distance learning, dialogue, and dissemination of knowledge and skills. The IQIC works with participating sites to collect information on site-specific outcomes, identify risk factors for mortality and infection, examine risk-adjusted mortality, provide comparative benchmarking data to evaluate program performance, and construct a collaborative framework for sustainable quality improvement in low-middle income country programs.

Approximately 60,000 surgical procedures have been entered into the IQIC database, and surgical teams from 47 sites in 22 countries benefit from educational webinars and site visits from Boston Children's Hospital focused on safe perioperative practice, infection reduction, and team-based care. The IQIC has shown adoption of educational and quality improvement strategies to be associated with rapid, significant reductions in risk-adjusted mortality and infections among participating sites. IQIC has published these results in multiple academic journals, with additional articles in progress, to further the knowledge body in this field.

This coming year, IQIC work will expand to include an infrastructure assessment survey to participating sites, pilot a pediatric cardiac catheterization registry, evaluate adult congenital heart surgery outcomes, and conduct a global learning session at the World Congress of Pediatric Cardiology & Cardiac Surgery in Barcelona, Spain in July 2017.





Left photo: IQIC team with partners from Fundación Cardioinfantil and Kardiasw A.C. during a site visit in Bogota, Colombia
Right photo: Anna Fisk, RN, BSN, CCRN, teaching nurses from G. Kuppuswamy Naidu Memorial Hospital in India

OPENPediatrics.org

OPENPediatrics is a clinician community site that supports online learning, social collaboration and access to information on demand. Today, the platform has users in 145 countries and 2,380 hospitals across the world, creating a connected global community of learners.

OPENPediatrics produces educational videos that cover a range of pediatric care topics, from critical care to cardiology to emergency response planning. All content is peer reviewed and academically rigorous, filling a void for high quality content in the open source information world. In addition, OPENPediatrics develops guided learning pathways for learners, which are curricula with pre- and post-tests. Several new guided learning pathways have recently been launched this year including: Introduction to Pediatric Cardiac Disease, Introduction to Genetics, and Disclosure and Apology. The platform also offers a social learning component, which includes the ability for users to create a group page that can be either public or private where they can host conferences, share resources, and have group discussions via a chat board. The platform offers free video chat capability allowing clinicians to connect with one another via video from all corners of the globe.

The OPENPediatrics team has drawn clinicians from all avenues of healthcare onto the platform with the goal of forming a multi-disciplinary community and forum for clinicians to learn, interact, and connect. One of the most popular features of the site is the monthly World Shared Practice Forum video series (including a monthly physician forum, a bi-monthly nursing forum, and a quarterly global health forum). During these monthly video conferences, an expert reviews a common practice issue and users log in to discuss how they approach the issue in their settings. "It's the only forum where you can be in one place and really learn what your colleagues around the world are doing and what challenges they are facing," says Dr. Traci Wolbrink, who, along with Dr. Jeffrey Burns, Chief of Critical Care at Boston Children's Hospital, founded OPENPediatrics in 2007. "It helps build understanding of why people may or may not be doing certain things or following guidelines."

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Top photo: Clinicians at Cambodia's Angkor Hospital for Children review the unique features of OPENPediatrics
Bottom photo: OPENPediatrics in use at Komfe Anokye Teaching Hospital in Kumasi, Ghana

Simulator Program (SIMPeds)



"Medicine is one of the few high-risk industries where people do not practice prior to game time," says Dr. Peter Weinstock, a pediatric intensivist and Dwirector of the Simulator Program at Boston Children's Hospital (SIMPeds Program). The SIMPeds Program was created to give health teams a practice space through simulated scenarios. The overarching goal of the SIMPeds Program is to provide medical teams (physicians, nurses, technicians, pharmacists, among others) the opportunity to practice and improve their skills in an environment that allows people to learn without risking patient harm.

For the past 15 years, the Simulator Program at Boston Children's Hospital has honed the concept of scenario-based simulation training in medicine. To reinforce a high level of both realism and relevance, SIMPeds offers courses which recreate environments that mirror the layout and equipment of clinical space (including an operating room and an ICU room) and are developed based on data and records from real clinical cases. The courses are often team focused; the participants generally come from the same teams of doctors, nurses and others who would normally work together to care for a child seen by their service.

While SIMPeds engineers have created amazingly life-like trainers and synthetic patients that look and feel real, "the technology is an aside," says Melissa Burke, the Director of Operations for SIMPeds. "What makes our simulation powerful is the ability to provide expert debriefing even when we are using something as simple as a doll to represent the patient. The technology is great and can be helpful in a country with a lot of resources, but we can also have an impact in countries that can't afford that technology."

A simulation team recently traveled to Chandigarh, India, which is culturally a hierarchical society with imbalance between genders, education, and healthcare provider roles. In some healthcare settings, nurses carry out doctors' orders word-for-word without asking questions or providing feedback. Boston Children's physicians, Drs. Sitram Emani (Cardiothoracic Surgery) and Ravi Thiagarajan (Cardiology), leveraged the expertise of the SIMPeds Program to create cardiac simulations in which conversations between nurses and physicians were debriefed and discussed so that even the most junior members of the team felt empowered to ask questions or make observatiovns. This led to improved team communications and pediatric outcomes.

SIMPeds is a powerful tool regionally, nationally, and in the global health field and has partnerships in India, as well as in 12 other hospitals in 7 countries around the world. SIMPeds supports global health efforts for hospital clinicians at the simulation Center headquarters in Boston Children's Center for Life Sciences Building where Global Health Fellows are given the opportunity to participate in Boston-based simulations that prepare them to provide global healthcare in the field.

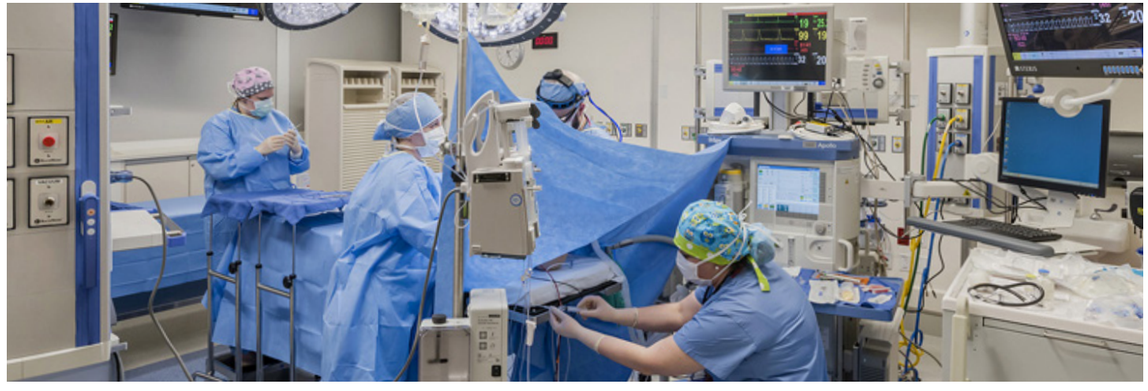
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Drs. Sitram Emani & Ravi Thiagarajan leading cardiac simulations in India









Conclusion

Boston Children's Hospital is a community of caregivers, many of whom are engaging in transformative global health work. The Global Health Program works to support and expand these global health efforts by promoting the practice of global health in an organized, goal oriented, and strategic way to build mutually beneficial sustainable partnerships that connect to sectors beyond the health industry.

Although globally, child illness and mortality is still a dire reality in many communities, the rapid drop in global child deaths in the last 20 years is one of the world's most spectacular and most hopeful success stories. It shows what is possible with the right resources and programs: real and tangible change. More needs to be done to make sure this progress continues, and the Boston Children's Global Health Program will continue to be a part of this effort with our problem-focused, solution-driven and locally-empowered approach.

Until Every Child Is Well

To learn more about our work and to donate, please visit our website:
bostonchildrens.org/globalhealth

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