



# PRESIDENT'S GLOBAL IMPACT FUND

## Research Application

Please fill out and **save** this form. You may then email all application materials together, ensuring they are clearly labeled with the applicant's last name in the subject line, to [globallimcore@umaryland.edu](mailto:globallimcore@umaryland.edu).

Although not required, you may include scanned letter(s) of support as part of your application.

Application overview is available at [umaryland.edu/global/impact-fund](http://umaryland.edu/global/impact-fund).

Questions? Email [globallimcore@umaryland.edu](mailto:globallimcore@umaryland.edu).

### PROJECT INFORMATION

**Title:** Point Prevalence Study in Acute Pediatric Critical Illness in Low-Resource Countries

**Project location(s):** Multi-Center, Multi-National Prospective Observational Study

#### Applicants:

Name: Adrian Holloway, MD  
Title: Assistant Professor Pediatrics

Department: Pediatrics, Pediatric Critical Care  
Email: [aholloway@som.umaryland.edu](mailto:aholloway@som.umaryland.edu)

Name: Adnan Bhutta, MBBS  
Title: Professor Pediatrics

Department: Pediatrics, Pediatric Critical Care  
Email: [abhutta@som.umaryland.edu](mailto:abhutta@som.umaryland.edu)

Name:  
Title:

Department:  
Email:

Name:  
Title:

Department:  
Email:

Name:  
Title:

Department:  
Email:

#### Non-UMB Collaborators:

Name: Teresa Korts, MD, MS, PhD

Institution: University of California, San Francisco

Name: Niranjana "Tex" Kisson

Institution: University of British Columbia

Name: Ericka Fink, MD

Institution: University of Pittsburgh

Name: Hendry Sawe, ME, MMED, MBA

Institution: Mmuhimbili University of Health/Allied Sciences

Name: Tagbo Ogunu, MD

Institution: University of Nigeria Teaching Hospital, Enugu



## APPLICATION

1. Provide an abstract of your project, outlining proposed outcomes and timeline. (500 words max)

Greater than 95% of the global 6.1 million annual deaths in children under 14 years of age occur in low- and middle-income countries (LMICs). Outside of the neonatal period, the most common causes of child mortality in LMICs are infections (pneumonia, sepsis, gastroenteritis, malaria); trauma and injuries; and malnutrition. If burden of disease and resource needs were better understood in LMICs, a significant number of these lives could be saved with supportive interventions and proven, simple critical care interventions despite challenging environments and fewer available resources as compared to high-income countries (HICs). Unfortunately, critical care services, defined as hospital care for children with sudden, serious reversible disease, are not universally available and are frequently lacking in LMIC settings with the highest burden of disease. Without region-specific data that captures the burden of disease, outcomes, and resource utilization of pediatric populations in LMICs, we cannot implement context-appropriate, evidence-based interventions, or appropriately allocate limited but available resources to children in need.

We, therefore, have decided to undertake a large, prospective, observational, multicenter, multinational point prevalence study with the primary objective to measure the burden of acute pediatric critical illness in resource-limited settings in low- and middle-income countries (LMICs). The true burden of disease and resource utilization by this population are not known; and, to address these critical gaps in knowledge our study will (1) determine the etiology and prevalence of pediatric acute critical illness amongst children presenting to participating hospitals in LMICs from 28 days of age to 14 years including basic demography, vitals signs, danger signs, and comorbidities, (2) measure hospital outcomes (hospital mortality, length of stay, lab values, imaging studies) in children with acute critical illness in LMICs, and (3) determine hospital resource utilization by children with acute critical illness such as medications, blood products, vasoactives, oxygen, and non-invasive and invasive respiratory support.

Point prevalence studies are a valuable study design to prospectively gather individual-level data and measure variability in outcomes and resource utilization across a large number of geographic regions and healthcare settings. This study is anticipated to take 18 months to complete; 6 months targeted for site recruitment, local IRB/ethics approval, and team component training with REDCap and data transfer. A pilot study has been completed in Pakistan and another underway in Kenya to test data quality, IT quality, and data transfer issues. Data collection will take place over one year at 4 discrete, one-week time points with an expected start date in Spring 2021, pending local capacity during the novel SARS pandemic.



2. How does your proposal align with the UMB Global Action Framework? [umaryland.edu/global/impact-fund](http://umaryland.edu/global/impact-fund)  
Which areas of excellence does this initiative fall into? (150 words max)

Our proposal is closely aligned with the UMB Global Action Framework in three significant arenas: global health, international partnerships, and interprofessional global education and research. This is the first study to attempt to measure the burden of non-specific acute pediatric illness in low-resource countries with the highest burden of disease. The contribution of this research will be significant because understanding the causes, burden, and resources required to manage acute pediatric critical illness will help health systems in LMICs more efficiently and effectively allocate available resources with the potential to improve global pediatric mortality. Additionally, there is a unique opportunity to develop new, long-lasting, bilateral exchanges internationally and strengthen already existing ones. We, as part of this project, have clear authorship and collaborator guidelines with our international colleagues and will work with our colleagues in secondary analyses once data collection is complete.

3. Describe any cross-campus collaboration in your project. (250 words max)

At this point we do not have cemented any formal cross-campus collaboration with this project. Due to the breadth of the data that will be collected and the diversity of countries and collaborators involved, we anticipate future collaboration with secondary analyses of our primary data as well as collaboration in developing interventional studies in the future.



4. Describe the international collaboration in your project including the history of your collaboration and if the community and local stakeholders were involved in designing the project. (250 words max)

The nascent ideas and collaborations with respect to this study were built from long-standing relationships and single-center studies examining the epidemiology and morbidity and mortality in low-resource countries. The local collaborators have worked for many years in countries such as Mali, Malawi, Tanzania, and Pakistan; and, the desire to conduct a larger, multi-centered study developed organically and through the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) research network. The international collaborators were intimately involved in developing the case report forms. It was important to develop bilateral engagement in the study, so a preliminary study was performed entitled "Pediatric Acute Care Infrastructure and Resource Availability in Resource-Limited Countries: A Multi-Country Survey."

Furthermore, leadership for the conduct of the study is split equivalently between local and international collaborators and translations have been completed for the study in French, Spanish, Portuguese, and English.

5. How will award funds be used to reach your goals? (250 words max)

These funds are of vital importance to this project as it will provide salary support for research co-ordinators at certain study sites, will cover the cost of IRB approval at some of the international sites, as well as provide for statistical and IT support. There are approximately 60 international sites that have agreed to join in this venture and the resources and capacity at each of these sites is quite disparate and diverse. Certain of our collaborators do have robust research and staffing capacity to participate fully with minimal financial or IT support from our team locally. However, there are sites that are more acutely under resourced but have significant contributions to this research project. It is of utmost importance to utilize these funds--such as the provision of 4G or WiFi support, to cover the cost of IRB/local ethics approval, salary coverage for research teams--to eliminate excess burden so that our international colleagues can contribute to their fullest ability.



6. Will this project lead to any of the following? If so, please briefly describe. (250 words max)
- Development and submission of a collaborative proposal for external funding
  - Development and submission of a collaborative scholarly publication
  - Development of new collaborative curricular programs (degree programs, courses, faculty exchanges)
  - Increased engagement in regions of the world where UMB already has academic partnerships and collaborative activities

Through this study, we will obtain key knowledge about acute pediatric critical illness prevalence, etiology, outcomes, and resource-utilization in resource-limited settings and will be submitted for scholarly publication. This is a crucial first step towards the development of evidence-based, context-appropriate interventions to lower child mortality. The results from this novel and important study will determine future pediatric research and health delivery priorities; provide epidemiologic data required to develop and test context-specific interventions; and inform acute pediatric critical care resource allocation. More specifically, we plan to use this data to develop and submit for NIH funding focusing on Pediatric Trauma and Critical Illness and expansion of the research conducted in global health arenas with a focus acute care pediatrics. Through our close relationships with the countries involved in the study, we hope to foment deep, sustainable bilateral connections by facilitating scholarly activity with our international colleagues and curriculum development focused on pediatric critical illness. Combined, the results from this study will have a transformative impact on child health outcomes in resource-limited settings around the world.

7. Describe plans for managing this project after the award, or sustaining this effort after funding. (250 words max)

Initial funds for this project will be utilized to maximize the research output from this proposal. We expect to utilize all funds in the one-year research period to cover local staffing costs, IRB applications, and IT support. We anticipate that the manuscripts produced from this project will allow for government/NIH funding for future studies. There is an expectation that a number of secondary analyses will be able to be performed on this data and it would be important to provide statistical support for our colleagues in this endeavor as well.



## BIOSKETCHES

Provide a brief overview of research interests and applicable experience for applicants and collaborators. Please use no more than 70 words per individual.

Dr. Adrian Holloway: Assistant Professor of Pediatrics and Program Director for the Global Health Pediatric Critical Care Fellowship in the Division of Pediatric Critical Care. He involved in international clinical research and educational activities, including Bubble CPAP in Mali, Treating Brain Swelling in Pediatric Cerebral Malaria, and curriculum development for cardiac critical care in Ethiopia. He has served as a cardiac intensivist in several countries--including Iraq, Iran, Peru, Nigeria, Tanzania, El Salvador, Haiti, and Ecuador.

Dr. Teresa Kortz: Dr. Kortz has collaborated with Muhimbili National Hospital (MNH) on pediatric clinical research projects since 2015, including successfully conducting a prospective cohort study in over 2,000 children with sepsis. She has also helped to strengthen the local clinical research infrastructure by establishing the first REDCap server in the country and training a highly-skilled team of clinical research assistants.

Dr. Adnan Bhutta: Dr. Bhutta has been closely collaborating with colleagues in Malawi, Mali, and Pakistan on clinical research, medical education and clinical activities since 2014. This collaboration includes the successful formation of a global health pediatric critical care medicine fellowship, which is in its fourth year.

Dr. Hendry Sawe: Dr. Sawe is the Head of the Emergency Medicine Department at Muhimbili National Hospital in Dar es Salaam, Tanzania, the teaching hospital for the Muhimbili University of Health and Allied Sciences. He is personally committed to clinical research in Tanzania, first as an NIH GloCal fellow, then mentor, and now as a steering committee member.

Dr. Niranjana Kissoon: Dr. Kissoon is executive director of C&W Global Health, Vice Chair of Global Sepsis Alliance, Professor of Pediatrics and University of British Columbia. He is interested in methods of building capacity to provide timely services to children who are injured or acutely ill in resource poor areas of the world, as well as issues relating to severe infection and sepsis as well as the planning of mass critical care in disasters and pandemics

Dr. Tagbo Oguonu: Dr. Oguonu is a faculty member of the Department of Paediatrics at University of Nigeria, Nsukka and studies respiratory and infectious disease and their impacts on school readiness, financial burdens of chronic pediatric diseases, and outcomes in resource-limited settings

Dr. Ericka Fink: Dr. Fink is focused on resuscitation, neurocritical care, and rehabilitation of children with brain injury. In particular, Dr. Fink is interested in the epidemiology and outcomes of these children as well as studying innovative serum and imaging biomarkers to evaluate the effects of interventions such as temperature management in improving outcomes. Dr. Fink is current the Principal Investigator on two major studies: POCCA (Personalizing Outcomes after Pediatric Cardiac Arrest) and PCORI Early Rehabilitation Protocol



## BUDGET

### EXPENSES

Provide a breakdown of expected costs. Please note: funds cannot be used toward the purchase of alcohol. Funds to support local collaborators are permitted and encouraged.

Item/description	Year 1 Amount	Year 2 Amount	Year 3 Amount
1. Statistical Support: Primary analysis	\$		
2. Statistical Support: Secondary analyses	\$		
3. WiFi Support and Internet Connectivity	\$		
4. Salary Support for Research Coordinators	\$		
5. International IRB/Ethics approval	\$		
6.			
7.			
8.			
9.			
10.			
Year Totals	\$		

**Total requested from President's Global Impact Fund \$**

*\*Note: Transfer of funds to individuals outside of the U.S. can be difficult. We will work with you to develop a solution to supporting local collaborators.*

### BUDGET NOTES

Use this space if you would like to share any information about the budget line items.



## DEPARTMENTAL AND INTERNATIONAL COLLABORATOR ENDORSEMENT

Applicants must demonstrate the support of their department chair as well as the endorsement of the center director (if applicable) and primary international partner(s). Electronic signatures, including PDF copies of email endorsements, are acceptable.

Applicant: Adrian Holloway, MD

Department: Pediatrics, Division of Pediatric Critical Care

Dept. chair name: Adnan Bhutta, MBBS

Dept. chair signature:

Center director name:

Center director signature:

Business admin name:

Business admin signature:

Business admin email:

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Applicant:

Department:

Dept. chair name:

Dept. chair signature:

Center director name:

Center director signature:

Business admin name:

Business admin signature:

Business admin email:

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Applicant:

Department:

Dept. chair name:

Dept. chair signature:

Center director name:

Center director signature:

Business admin name:

Business admin signature:

Business admin email:



# MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

## SCHOOL OF MEDICINE DEPARTMENT OF EMERGENCY MEDICINE

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REF: MUHAS/EMD/HoD/2020/36

28<sup>th</sup> October 2020

### To Whom It May Concern:

I am writing this letter in strong support of **Drs. Adnan Bhutta, Teresa Kortz, and Adrian Holloway** and their **UMB President's Global Impact Fund** proposal for the project entitled '*Acute Pediatric Critical Illness in Resource-Limited Settings: A Novel Point Prevalence Study*'. I am the Head of the Emergency Medicine Department at Muhimbili National Hospital in Dar es Salaam, Tanzania, the teaching hospital for the Muhimbili University of Health and Allied Sciences. I can reliably testify to the readiness and suitability of our site to be involved in this point prevalence study. I am personally committed to clinical research in Tanzania, first as an NIH GloCal fellow, then mentor, and now as a steering committee member. I am also committed to the study described in this proposal and will provide access to the necessary workspace, equipment, and personnel to complete the activities outlined in this proposal. Funding from the UMB President's Global Impact Fund would defray the costs and help support staff members (Information Technology, accountant and administrator) and the clinical research assistants who enroll patients and perform data entry 24 hours/day, 7 days/week. In addition, the Emergency Medicine Department has 24-hour wireless internet access for data entry. The Emergency Medicine Department also has a significant, successful history collaborating with US universities in both a research and clinical context and we have successfully completed more than a dozen adult and pediatric clinical research projects.

Drs. Bhutta, Kortz, and Holloway have the full support of the Emergency Medicine Department and myself at MNH. Thank you for your interest in the health of Tanzanian children; research such as this is instrumental for improving the health of our population.

Sincerely,

Hendry R. Sawe, (MD, MMED, MBA)  
Head, Emergency Medicine Department

**This is a sample  
international collaborator  
support letter.**

<b>Hospital name</b>	<b>Country</b>	<b>Site PI Name</b>
Karl Heusner Memorial Hospital	<b>Belize</b>	██████████
HUE CENTRAL HOSPITAL	Vietnam	████████████████████
Bugando Medical Centre	Tanzania	██████████████████
Hospital Nacional de Niños Benjamín Bloom	El Salvador	██████████████
Vietnam National Children's Hospital	Vietnam	██████████
Advanced Pediatrics Center, PGIMER	India	██████████
National Pediatric Hospital	Cambodia	██████████
Hospital de Clinicas. Facultad de ciencias medicas. UNIVERSIDAD Nacional de Asunción	Paraguay	██████████████
INSTITUTO NACIONAL DE SALUD DEL NIÑO	Peru	██████████
Centre Hospitalier Universitaire de Kigali (CHUK)	Rwanda	██████████
Tata Memorial Centre , Mumbai ,India	India	██████████
University of Nigeria Teaching Hospital	Nigeria	██████████
Kamuzu Central Hospital	Malawi	██████████
Saint Paul Millennium Medical College	Ethiopia	██████████
Saint Damien Hospital	Haiti	██████████
American University of Beirut Medical Center	Lebanon	██████████
Hospital Mario Catarino Rivas	Honduras	██████████
DR. SARDJITO GENERAL HOSPITAL	Mexico	████████████████████
Prof.Dr.R.D.Kandou General Hospital Manado	Rwanda	██████████
Hospital de Especialidades del Niño y La Mujer	Mexico	██████████████████
Butare University Teaching Hospital	Rwanda	██████████
Red Cross Children's Hospital	South Africa	██████████
Centro Hospitalario Pereira Rossell	Uruguay	██████████████████
Muhimbili National Hospital	Tanzania	██████████
The Aga Khan University Hospital	Pakistan	██████████
Yangon Children Hospital	Myanmar	██████████
NNAMDI AZIKIWE UNIVERSITY TEACHING HOSPITAL (NAUTH)	Nigeria	██████████
Scottish Livingstone Hospital	Botswana	██████████
Hawassa University Comprehensive Specialized Hospital	Ethiopia	██████████

<b>Hospital Name</b>	<b>Country</b>	<b>Site PI Name</b>
Hospital del Niño Dr. José Renán Esquivel	Panama	██████████

Hospital de Niños Sor Maria Ludovica	Argentina	██████████
Hospital Edgardo Rebagliati Martins	Peru	██████████
Hospital Dr Luis Calvo Mackenna	Chile	██████████
HOSPITAL DAS CLÍNICAS - UFMG	Brazil	████████████████████
Hospital Universitario Uanl	Mexico	██████████████████
Hospital Infantil Albert Sabin	Brazil	██████████
MacKay Children's Hospital	Taiwan	██████████
Hospital Universitario Jose Eleuterio Gonzalez	Mexico	██████████
CMN 20 DE NOVIEMBRE, ISSSTE.	Mexico	████████████████████
Rwamagana Provincial Hospital	Rwanda	██████████████████
Alvorada hospital	Brazil	██████████
HOSPITAL DEL NIÑO MANUEL ASCENCIO VILLARROEL	Bolivia	██████████████████
National Center for Maternal and Child Health	Mongolia	██████████████████
Hospital de Niños Orlando Alassia	Argentina	██████████████████
Centro Médico Imbanaco	Colombia	██████████
Hospital Infantil de México Federico Gómez	Mexico	██████████
Hospital General Leon	Mexico	██████████████████
Hospital Universitario del Valle	Colombia	██████████████████
University of Gondar Comprehensive specialized Hospital	Ethiopia	██████████
All India Institute of Medical Sciences	India	██████████
Hospital Edgardo Rebagliati Martins	Peru	██████████
Hospital Martagão Gesteira	Brazil	██████████
VietNam National Children's Hospital	Vietnam	██████████
University College Hospital Ibadan	Nigeria	██████████████████
Fundacion Santa Fe de Bogota	Colombia	██████████
Hospital San Vicente Fundacion	Colombia	██████████████████
KING FAISAL HOSPITAL, KIGALI	Rwanda	██████████████████

Selected Data From Pilot Study—Sindh Government Hospital Korangi 5

Karachi, Pakistan

*Acute Pediatric Critical Illness in Resource-Limited Settings: A Novel Point Prevalence Study*