

PACE Project Summary

Short Description:

General Data	
Project Title	Pediatric Acute Care Education (PACE)
Principal Investigators	Prof. Peter Andrew Meaney, Stanford University - USA Prof. Ambrose Agweyu, KEMRI-Wellcome Trust - Kenya Dr. Adolfine Hokororo, CUHAS-Bugando – Tanzania
Partner(s)	Catholic University of Health and Allied Science (CUHAS) Pediatric Association of Tanzania (PAT) Stanford University London School of Health and Tropical Medicine Area9 Lyceum
Funder(s)	Center for Innovation in Global Health Laerdal Foundation Maternal and Child Health Research Institute
Research Site(s)	Mwanza, Tanzania

Pediatric Acute Care Education (PACE) project is an ongoing implementation research project launched on May 2022, implemented by the Catholic University of Health and Allied Science (CUHAS-Bugando) in collaboration with the Pediatric Association of Tanzania (PAT), Stanford University and the London School of Health and Tropical Medicine. PACE is an innovative program utilizing adaptive e-learning environment to increase provider proficiency in newborn and pediatric acute care.

The overall aim of the project is to investigate and address knowledge gaps among health care providers providing care to sick-ill children and improving quality of care and improve pediatric outcomes within Mwanza region. This project is implemented within two districts in Mwanza region, Nyamagana and Ilemela districts each represented by health facilities.

Funded by the Center for Innovation in Global Health, Laerdal Foundation and the Maternal and Child Health Research Institute at the Stanford University.

Implementation Metrics and Outcomes:

Reach: PACE was implemented with 85% (195 out of 231) of identified providers demonstrating high accessibility and adaptability.

Learning Completion: Providers achieved a 78% completion rate of initial learning but only 7% for refreshers assignments.

Efficacy: The overall efficacy of the PACE system was estimated at 42%.

Metacognition: 32% of providers were identified as unconsciously incompetent indicating unawareness of their knowledge gaps. However, higher baseline conscious competence.

Tailored Skill Practices:

Within PACE implementing facilities, volunteering facility champions and health care providers practice rigorously certain identified clinical skills aiming at improving initial and refreshers knowledge and increasing provider’s engagement. Providers are tasked to a monthly clinical task to improve their hands on proficiency in clinical care.



Photo: Illustrating Health Care Providers at Makongoro HC practicing Newborn Neonatal Resuscitation

Content Development:

In collaboration with Subject Matter Experts from PAT, Educational Design Team and Facility Champions, we are continuously identifying learning needs, curating learning objectives and prepare learning modules based on National (Tanzanian) guidelines. We have been able to identify, develop and prepare 25 modules covering both newborn and pediatric acute care.

Content Development



Diagram: Illustrating the process and steps taken during PACE content development.

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Clinical Audit:

This part in the project involves evaluation of clinical practices to ensure they align with established standards and guidelines. In PACE project this is done using specific structured pediatric and newborn forms to assess how the providers have responded to the learning process.

Research Team:



Adolfine Hokororo, Senior Lecturer and Pediatrician. Associate Director-Quality Assurance at CUHAS. With PACE, she is the local Principal Investigator with extensive experience in clinical leadership and health care policies in Tanzania through her work with MOH, PAT, NIH and USAID.



Peter A. Meaney, Clinical Professor at Stanford University specializing in Pediatric Critical Care Medicine. With PACE project, he is a lead Principal Investigator focusing on provider education, implementation science and quality of care in resource-constrained settings.



Ambrose Agweyu, Kenyan Pediatrician and Professor of Epidemiology at the London School of Hygiene and Tropical Medicine. Influential in adapting WHO guidelines for Kenya and leading clinical trials for childhood pneumonia treatment.



Joseph R. Mwanga, Senior Lecturer and Qualitative Researcher working at CUHAS. Focuses on pediatric care and public health initiatives. As a qualitative research lead. He has played a crucial role in assessing PACE project feasibility and guiding its implementation.

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Theopista Masenge, Senior Pediatrician and the Vice President of the Pediatric Association of Tanzania. Leads implementation programs in child health advocating for the quality of pediatric care in Tanzania.



Hanston Ndosu. Medical Doctor and PACE Program Manager working at CUHAS. Plays a crucial role in healthcare program management and implementation.



Fredrick Maleko, Medical Doctor and certified PACE Learning Engineer working at CUHAS. Involved in designing and curating medical contents as per local needs. Working closely with Subject Matter Experts in content development and deployment.



Happy Baruti, Medical Doctor and the PACE Data Manager working at CUHAS. Has extensive background in implementing pediatric programs, She plays a crucial role in the program's clinical auditing, data collection and management.

Program Achievements:

- Established an outstanding relationship with regional authorities, the RCHMT and CHMTs on the program implementations.
- Throughout program implementation, there has been advisory support from the pediatricians and the Pediatric Association of Tanzania.
- Dissemination of our research work and findings to national and international conferences.

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- Scaling up of the project implementation to include local content development team and clinical auditing.
- Quarterly multi-stakeholders meeting involving the program's partners, regional authorities and facilities discussing on the progress, challenges and way forward on refining implementation strategies.

Publications:

Throughout the research period, we have been able to publish 2 research works and 1 is on review for publication.

1. Meaney PA, Hokororo A, Masenge T, Mwanga J, Kalabamu FS, Berg M, Rozenfeld B, Smith Z, Chami N, Mkopi N, Mwanga C, Agweyu A. Development of pediatric acute care education (PACE): An adaptive electronic learning (e-learning) environment for healthcare providers in Tanzania. *Digit Health*. 2023 Jul 24;9:20552076231180471. doi:
2. Meaney P, Hokororo A, Ndosu H, Dahlen A, Jacob T, Mwanga JR, Kalabamu FS, Joyce C, Mediratta R, Rozenfeld B, Berg M, Smith Z, Chami N, Mkopi NP, Mwanga C, Diocles E, Agweyu A. Implementing adaptive e-learning for newborn care in Tanzania: an observational study of provider engagement and knowledge gains *BMJ Open* 2024;**14**:e077834. doi: 10.1136/bmjopen-2023-077834
3. Evaluating the Implementation of the Pediatric Acute Care Education (PACE) Program in Northwestern Tanzania: A Mixed-Methods Study Guided by Normalization Process Theory (submitted to Health Research Policy and Systems)

Collaborators/Partners:



Project Photos:

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[A] Dr. Peter A. Meaney, lead PI with a team of qualitative research assistant working at MWACHAS building on challenges observed during pilot qualitative study.



[B] Dr. Hanston Ndosu engaging with Karume Heath Centre facility clinical champions.

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[C] A nurse practitioner at Makongoro HC practicing Newborn Resuscitation, TSP session.



[D] Dr Hanston Ndosu engaging with healthcare providers at a sensitization meeting, Karume HC.

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[E] Dr. Adolfine Hokororo, local PI engaging with stakeholders at the quarterly Mwanza CLN meeting.



[F] Quarterly multi-stakeholders meeting organized to discuss way-forward for the PACE Project.