SickKids | Centre for Global Child Health

SickKids Centre for Global Child Health Catalyst Grant Awardees
(awardees for each year are presented alphabetically by last name)

2026

Principal Applicant: Aline Freitas
Co-Investigator: John Parkinson
Core Faculty Sponsor: Daniel Roth

Project Title: Evaluation of content and label accuracy of infant commercial probiotics from low- and middle-income countries

Project Description: Probiotics are a promising strategy to modulate the infant gut microbiota, reduce neonatal infections, and promote healthy growth. However, probiotic regulations lack standardization and vary across countries. Proposed international guidelines rely on voluntary compliance. Reports from the US and Europe have shown that some probiotics have inadequate labelling and/or content, but this has not yet been investigated in low- and middle-income countries (LMICs). Moreover, 10 per cent of medicines in LMICs are estimated by the World Health Organization (WHO) to be substandard/falsified, suggesting that probiotics may also be affected. The overall goal of this study is to evaluate infant commercial probiotics, sold over the counter, in representative LMICs. Specific aims are to survey probiotic availability and label compliance based on proposed international guidelines, to assess whether health claims are evidence-based and to determine viable bacteria counts and species identity in the lab. Lack of consistency and low-quality products pose a major safety issue for the general population and are of even greater concern for infants. The findings of this study will identify weaknesses in the quality/regulation of commercial infant probiotics in some LMICs, which may inform policy through knowledge translation and advocacy and will highlight local technical capacity for manufacturing.

Principal Applicant: Mercedes Pilkington
Co-Investigators: Hazel Mumphansha, Dylan Bould, Amon Ngongola, Nasson Tembo, Samuel Sibanda, Bruce Bvulani, Mirriam Mvula, Justin Mulindwa and Kalizya Zimba

Project Title: Enhanced Recovery After Surgery for Children with Solid Tumours in Zambia

Project Description: Childhood cancers continue to pose a significant global health challenge. Surgery plays an integral role in the treatment and cure of many solid tumours; however, surgery can be high-risk. Much of the global variation in complications and mortality after cancer surgery for adults has been attributed to perioperative systems rather than patient factors or cancer stage. Enhanced recovery after surgery (ERAS) protocols have been demonstrated to be safe across a wide range of surgical specialties and procedures. ERAS protocols are multidisciplinary and span the perioperative period to provide structured evidence-based recommendations that result in fewer complications and better coordination of care teams. ERAS pathways have the potential to strengthen surgical systems for care delivery. The project team will co-develop an evidence-based perioperative care pathway and a contextually relevant implementation strategy for children undergoing cancer surgery in Lusaka, Zambia. By utilizing mixed methods, the team will create an acceptable and appropriate care pathway for providers and families, develop an implementation toolkit by performing a thorough context assessment and understand current practice variability and clinical outcomes for children undergoing cancer surgery in Lusaka. The team hopes this study will provide a crucial foundation to scale the implementation of ERAS to new patient populations in novel settings and will lead to improved safety and quality of surgical and perioperative care for all children requiring surgery for cancer in resource-constrained settings.

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2025


Principal Co-Applicants: Robert Bandsma, Debbie Thompson
Co-Investigators: Celine Bourdon, Michael Boyne, Kimberley McKenzie

Project Title: Low-grade inflammation and link to non-communicable disease risk in adult survivors of severe acute malnutrition

Project Description: Children exposed to severe acute malnutrition (SAM) in their early postnatal life risk several unfavourable outcomes, with death being the most significant. Children who survive SAM might be at greater risk of non-communicable disease (NCD) such as type 2 diabetes, hypertension, and coronary artery disease as adults. This project will investigate low-grade inflammation as a possible mechanism linking early childhood SAM to later cardiometabolic NCD. Low-grade inflammation is known to occur during SAM (reportedly persisting after nutritional recovery) and is also associated with type 2 diabetes, cardio-vascular disease and obesity. Does low-grade inflammation persist beyond recovery in SAM survivors and increase cardiometabolic risk in adult survivors? If researchers are able to identify markers of low-grade inflammation and hypothesize potential important pathways in these adult survivors, it might pave the way for interventions that could include de novo anti-inflammatory therapeutic formulas or feeds of different nutrient compositions for infants with SAM to ensure long-term cardio-metabolic health.

Principal Applicant: John Tam

Project Title: Rapid Design and Synthesis of Biotherapeutics to Treat Enteric Bacterial Disease

Project Description: Enteric diseases have a profound impact on intestinal health, nutrition and childhood development – particularly in developing countries. These diseases are commonly caused by bacterial pathogens such as shigella, typhoid and especially cholera, which the World Health Organization (WHO) estimates are responsible for as many as 150,000 deaths worldwide annually. The devastating gastrointestinal symptoms of enteric diseases caused by these pathogens are due to secreted toxins, known as A-B toxins that enter and disable the cells lining the intestine resulting in fluid loss, inflammation and tissue damage. Thus, neutralizing these toxins is hypothesized to protect cells from toxin damage and prevent disease. The project team's goal is to develop small protein inhibitors, known as mini binders, as therapeutics that block the interaction of the cholera toxin with its receptor on the cell surface. By leveraging machine learning and artificial intelligence, the team hopes to discover de novo proteins that combine the specificity of antibodies and manufacturability of small molecules, providing a more effective therapeutic approach over antibiotics and other conventional treatments.

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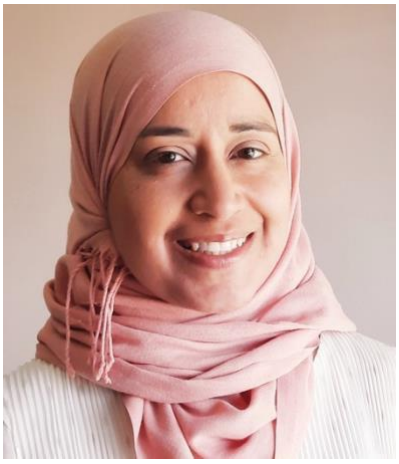
2024

Principal Applicant: Richard Gardner
Co-Investigators: Tewodros Tilahun, Daniel Solomon, Etenesh Tewolde

Project Title: Development of a Screening Program for Hip Dysplasia in Ethiopia

Project Description: Developmental dysplasia of the hip (DDH) is a common presentation in Ethiopia with children presenting after walking age with one or both hips dislocated. Significant surgery is needed at this stage but a diagnosis in infancy would allow for non-operative management in the majority of paediatric patients. This study aims to understand the incidence of the condition through an ultrasound screening campaign of 3,000 infants. It is a collaborative program involving nurses, midwives, radiologists, and orthopaedic surgeons at three of the largest hospitals in Addis Ababa. This study should provide the evidence needed by the Ethiopian Health Ministry to inform the development of a wider screening program and consideration of public health measures to minimize late-presenting hip dysplasia. The project team hopes that this study will also lead to novel screening methods for DDH and an understanding of the efficacy of orthotic management in this population.



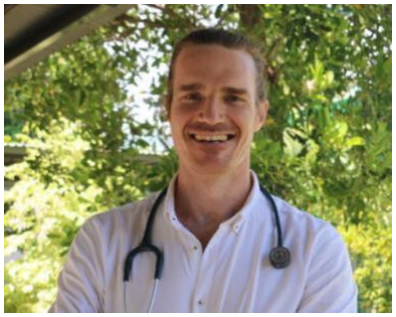
Principal Applicant: Fyeza Hasan
Co-Investigators: Stephanie de Young, Kimberley Widger, Megan Doherty

Project Title: Improving Access to Paediatric Symptom Management: Engaging and Educating Health Care Practitioners to Improve Lives for Children with Serious Illness in Bangladesh

Project Description: Each year, over 200,000 children from Bangladesh experience significant suffering due to serious health problems. Paediatric palliative care is a holistic medical approach to address this suffering. Currently, palliative care services are centralized in the capital city of Dhaka and only available to 10 per cent of the children who need it. This capacity building project begins to address this issue by developing a sustainable paediatric palliative care leadership and education network across Bangladesh. Through this project, a hub and spoke network with a centre of excellence for paediatric palliative care in Dhaka, and three shared-care centres across the country will be built. Using a train-the-trainer approach and innovative online and in-person education methods, the project team will work with the centre of excellence, and local and regional experts to teach, mentor and support health professionals in these centres to build local

and regional networks for the provision of palliative care. Qualitative and validated quantitative tools, adapted to the Bangladeshi context, will be used to monitor and evaluate the impact of our project.

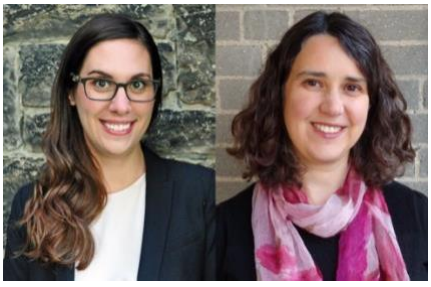
2023



Principal Applicant: Sam Brophy-Williams

Project Title: Mobile App Gamification in Clinical Teaching (MAGiC)

Project Description: The Mobile App Gamification in Clinical Teaching (MAGiC) project aims to augment capacity building activities through innovative instructional design to promote learner engagement and retention. The team will implement an app-based interactive community learning platform to strengthen faculty development instruction at the Ghana College of Nurses and Midwives (GCNM). The app, called “Kaizen”, already developed by clinician educators at the University of Alabama at Birmingham – a new collaboration partner for the Centre - uses concepts of “gamification" and spaced repetition, with published success in North America. The team will evaluate both the implementation of this project for feasibility and scalability in the LMIC context, and its efficacy in promoting learner engagement and content retention.



Principal Co-Applicants: Jo-Anna Baxter, Alison Mildon
Co-Investigators: Deborah O’Connor, Daniel Sellen, Bronwyn Underhill

Project Title: Understanding creative programming to deliver lactation and food supports through the Canada Prenatal Nutrition Program in Ontario: A qualitative study

Project Description: Maternal and infant health, nutrition, and well-being from pregnancy to early childhood are undeniably critical. The Canada Prenatal Nutrition Program (CPNP) is a federal initiative that supports socially and economically vulnerable pregnant women and their infants by offering community-based perinatal health and nutrition services. The CPNP employs a flexible programming model, enabling projects to adapt activities to their local context. At this time, there is no regular process or outcome evaluation of CPNP services, such as documentation of how the flexible CPNP programming model is applied in practice. The overall goal of the study is to engage with community-based implementers of the CPNP across Ontario to understand their experiences and recommendations for delivering lactation and food supports to marginalized mothers and infants. The team will use focus group

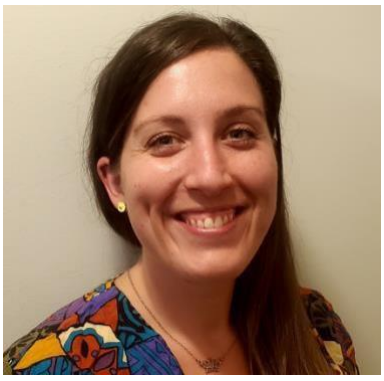
discussions, and a modified-Delphi exercise to establish priorities for CPNP outcome monitoring and future implementation research. As participants in the CPNP include newcomers to Canada, diverse ethno-racial and low-income groups, and Indigenous communities, findings will support strengthening the health and nutrition of marginalized groups within the Canadian population.

2022

Primary Applicant: Helen Dimaras
Co-Investigators: Myrna Lichter, Judith Mintz, Natalie Spence, Justin Kirtzinger

Project Title: Eye Health of Indigenous Children in Toronto

Project Description: Eye health in Indigenous Canadian populations is a growing concern. Previous studies in Ontario have identified significant deficits in vision screening practices, and high rates of uncorrected refractive error among Indigenous children compared to the general population. Still, despite a rapidly growing Indigenous population, this gap is not currently being addressed. This project presents a novel approach to identify and address inequities in vision care by utilizing an integrated stakeholder approach and learning health system design. It will aim to answer the question "what are the eye health needs of Indigenous children living in Toronto?". The team will conduct a pilot vision screening project together with the Native Women's Resource Centre of Toronto and the Native Child and Family Services of Toronto to identify (1) the prevalence of vision and eye disorders among Indigenous school-age children; (2) the economic, social, and cultural barriers Indigenous children face to accessing care; and (3) methods to provide culturally safe, comprehensive eye examinations and follow-up care.



Primary Applicant: Megan Parry
Co-Investigator: Francoise Nwabufo

Project Title: Scaling up community care for children with sickle cell disease in rural Cameroon

Project Description: This project aims to improve child health through an innovative capacity building project on the topic of sickle cell disease (SCD) in a low-resource setting in rural Yaounde, Cameroon. SCD is one of the most life-threatening genetic diseases in the world, however with good access to continued care the disease can be managed and promote good health and social outcomes. The project will take a collaborative approach consisting of three core activities: training health care workers in the community and hospital setting; supporting

families and children with SCD in rural settings through home visits; and visiting schools to sensitize children at a young age and decrease stigmas. It will also address the link between nutrition and outcomes for SCD.

2021

Primary Applicant: Maryse Bouchard
Co-Investigators: Mark Myerson, Shuyuan Li

Project Title: Improving access to pediatric clubfoot treatment in remote, resource-poor areas using smart glasses technology for telementoring of surgeons on casting techniques and surgical procedures

Project Description: This pilot study evaluates the use of smart glasses technology for telementoring of surgeons in remote, resource-poor areas in the treatment of pediatric clubfoot deformities. This is a collaboration between The Hospital for Sick Children, and two non-profit organizations, Steps2Walk and Ohana One. As the opportunities for surgical training in resource-poor areas are limited, telementoring is an ideal solution as it can build sustainably from whatever state of clubfoot care programming a country or region has attained. During this 6-month training curriculum, knowledge and surgical skill acquisition of mentee surgeons will be assessed by the mentor using Objective Structured Assessment of Technical Skill (OSATS) and Global Rating Score (GRS) evaluations after each procedure. Impacts of the training on the mentee surgeon's practice and patient population will be measured with objective surveys regarding case volume, case complexity, and confidence before and after the program. Mentor and mentee experiences using the smart glasses, including technical challenges, will be recorded after each live procedure.

Primary Applicant: Isabel Potani
Co-Investigators: Robert Bandsma, Allison Daniel, Chisomo Eneya, Sylvester Kathumba, Wieger Voskuijl

Project Title: Optimization of ready-to-use therapeutic food: Increasing protein quality and quantity to improve growth in children with severe acute malnutrition

Project Description: Ready-to-use therapeutic food (RUTF) is currently the standard nutritional treatment for children with severe malnutrition. Protein requirements are high in these children, but RUTF does not meet these needs based on protein quality scores. We therefore partnered with Nutriset, the largest global manufacturer of RUTF, to create a new version of RUTF with higher protein quality and quantity. We hypothesize that this optimized RUTF with will lead to greater weight gain in severely malnourished children, which we will assess within a proof-of-concept randomized controlled trial in Blantyre, Malawi.

2020

Primary Applicant: Jo-Anna Baxter
Co-Investigators: Allison Daniel, Deborah O'Connor, Yaqub Wasan, Asad Ali, Robert Bandsma, Céline Bourdon, Zulfiqar Bhutta

Project Title: Investigating pathways between maternal nutritional status, breastmilk composition, and infant linear growth in rural Pakistan

Project Description: Based on an established hypothesized pathway model, reflecting pathways between maternal nutritional status, breastmilk composition, infant linear growth, and from a complete breast expression collected at 3-months postpartum, this study aims to examine these simultaneous pathways using structural equation modelling. Participants will include a subset of mother-infant pairs enrolled in an ongoing trial in rural Pakistan (MaPPS Trial; ClinicalTrials.gov identifier: NCT03287882). Additionally, this study will aim to determine whether breastmilk micronutrient composition differs between those participants receiving daily multiple micronutrient supplements compared to those receiving the standard of care (no supplementation).

Primary Applicant: Mariella Munyuzangabo
Co-Investigators: Jean-Luc Kortenaar, Chantal Shaib, Delvin So, Lauren Erdman, Huma Qamar, Diego Bassani

Project Title: Using Machine Learning to improve the efficiency and sensitivity of literature reviews

Project Description: Abstract screening phases during literature reviews can be long and error-laden processes, requiring multiple reviewers to ensure the inclusion criteria are met. Recent advances in Natural Language Processing (NLP) can be used to automatically rank abstracts according to their relevance for subsequent human screening. In addition to speeding up the review process, such models can identify potential human errors in screening, improving the overall quality and comprehensiveness of literature reviews. We leverage a transformer-based language model ROBERTA to accurately embed and classify abstracts for inclusion in literature reviews. The goal of this project is to develop an open source, highly efficient and high-performing algorithm with a user-friendly interface, which would allow researchers to conduct literature reviews or update their past literature reviews efficiently.

2019

Primary Applicant: Nancy Dale
Project Title: Improving the Outcomes of Community-based Management of Acute Malnutrition

Primary Applicant: Sumit Gupta
Project Title: Economics of Childhood Cancer in Africa

2018

Primary Applicant: Avi Denburg
Project Title: Childhood Cancer Drug Access in Low- and Middle-Income Countries: A Pilot Study

Primary Applicant: Laura Vresk
Project Title: Paediatric Nutrition Support in a Low-Resource Hospital Setting

2017

Primary Applicant: Céline Bourdon
Project Title: Malnutrition-induced Gut Dysfunction Treated by Milk-derived Exosomes: Proof of Concept

Primary Applicant: Heather Christine Millar
Project Title: Starting at the Roots: Using Human-centred Design to Create an Adolescent Pregnancy Program in Eldoret, Kenya

Primary Applicant: Nandita Perumal
Project Title: The Effect of Nutrition-specific National Policies on Micronutrient Malnutrition among Young Children in Low- and Middle-income Countries

2016

Primary Applicant: Michael Leung
Project Title: Maternal-child Exposures to Persistent Organic Pollutants in Dhaka, Bangladesh

2015

Primary Applicant: John Parkinson
Project Title: Investigating the Role of Eukaryotic Microbiota in Malnutrition

Primary Applicant: Lillian Sung
Project Title: Quality of Life, Fatigue and Family Functioning for Children with Relapsed Acute Leukemia in El Salvador