



Global Child Health and Sustainable Development Goals



**Karolinska
Institutet**



The Department of Global Public Health is a multidisciplinary department with the aim to advance knowledge about challenges and opportunities for public health in a local, national and global setting. This includes studying how societal phenomena affect health in a globalised world and translating research evidence into public health action.

In line with Karolinska Institutet's vision, we strive towards better health for all and give special attention to the needs of the most vulnerable populations.



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Welcome to the Global Child Health & Sustainable Development Goals team!

Message from Tobias Alfvén

I am glad that you have picked up this brochure and started reading about our research team, Global Child Health & the Sustainable Development Goals. I do not know you, but if you started reading this you must have an interest in Global Child Health and/or the Sustainable Development Goals, and that is a great starting point. If we want to change the world and make it a better place for children and adolescents to grow up in, we must do it together, and we must use science and research to tackle the challenges we have in front of us.

Child health has seen a lot of progress in the last thirty years, under-five mortality has decreased by more than half, many more children go to school and fewer children live in extreme poverty. However, 5 million children still die before their fifth birthday and the differences in risk between different countries can be as great as 50-fold. And survival is not enough, we must give children and adolescents the possibility to thrive, and to thrive on a healthy planet.

All world leaders agreed on a road map for this in 2015; the 2030 Agenda and the Sustainable Development Goals (SDGs). If we use the 2030 Agenda and the SDGs, they are an excellent blueprint for our work for a better future for all of us, and especially for our children and for future generations.

In this brochure you will find more about the research we do in our team to find ways to improve survival for children and give them possibilities to thrive.

If you have any questions, would like to join us, work with us, or support us, please do not hesitate to get in touch.

All the best,
Tobias



Tobias Alfvén
Team leader of Global Child Health
and Sustainable Development Goals

Our research

The Global Child Health and Sustainable Development Goals team is a team in the research group Health Systems and Policy (HSP). Our research aligns to the HSP group's vision to achieve health and equity in an interdependent world by improving health systems and policies. The team focuses on child health through an SDG lens and our research strives to be multidisciplinary and drive evidence-informed policy making. Key foci of our work are on identifying and addressing bottlenecks within the health system to make the most essential care available to the most vulnerable.

Our research projects are divided across seven different research themes to cover the various areas of global child health:

- Case management and emergency care
- Technology and innovation
- Infectious diseases and outbreak control
- Newborn care
- Child development
- Adolescent mental health and well-being
- Multi-sectoral and policy research

Find more information about our research sorted by our research themes.



Exchanging ideas, methods, and results is what drives education and science forward. Therefore, we collaborate in research and education with partners all over the world, including universities, hospitals, public health agencies and civil society, to assure quality in all our activities.

From research to policy

Our team members are open to assignments and collaborations in which our expertise in global child health may serve to formulate policy-documents and further policy-making and implementation, for example policy briefings and guidelines produced by national agencies and WHO.

Members of the team have worked, and continue to do so, as temporary advisors and in expert roles in national research councils and organisations such as the UNICEF and WHO. We also write textbooks and popular science articles in magazines.

Communicating with the public

It is important to communicate our research to the public at large. To do so we give presentations at stakeholder conferences and public lectures. You also see our team members engaging with the media to discuss and debate global and public health issues.



Our team has 30 multidisciplinary research projects.



The projects are divided across 7 research themes, varying from newborn care to adolescent well-being.



We conduct research in over 10 countries, mostly in sub-Saharan Africa and Southeast Asia.



We have over 40 collaboration partners from all around the world.



Bach/UNICEF

Child health in the Sustainable Development Goals era

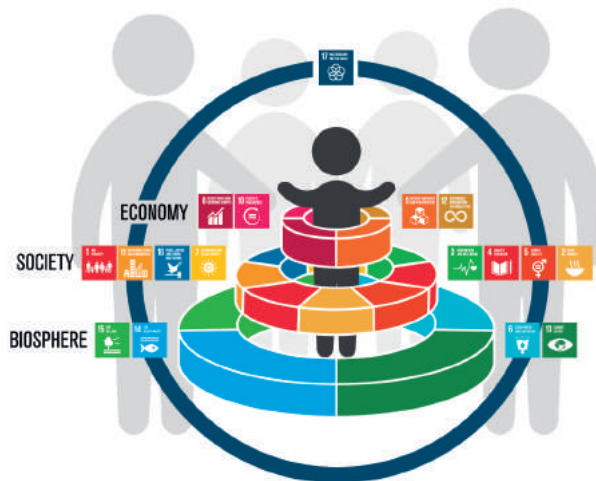
Despite the progress made during the Millennium Development Goals period, many challenges remain. More than five million children still die before their fifth birthday, many more suffer from preventable diseases while large health inequalities exist and children's rights are often overlooked.

Children and adolescents should be able to thrive and be equipped with sufficient resilience to face global challenges such as climate change and the growing health risk posed by non-communicable diseases.

To enable them not only to survive but thrive, children and adolescents ought to be at the heart issue when it comes to the 2030 Agenda and the SDGs. This would enable us to address the fundamental inequities which continue to disadvantage children and adolescents around the world, ensuring that no child is left behind.

Placing children at the centre of the Sustainable Development Goals will ensure that they realise the right to survive and thrive as the true beneficiaries of the 2030 Agenda.

Read more on this topic in the article written by team members: *Placing children and adolescents at the centre of the Sustainable Development Goals will deliver for current and future generations.*



KELLY ELIMIAN

Postdoctoral Researcher,
Applied Epidemiologist and
Medical Microbiologist

I am an applied epidemiologist with a background in medical microbiology. My primary research focuses on using epidemiology, systems and participatory methodologies to address diseases that are endemic in low- and middle-income countries, especially those that are prevalent in fragile areas.

One of my research projects focuses on strengthening the implementation of multisectoral cholera interventions in Nigeria: WASH, surveillance and laboratory, case management, oral cholera vaccination, community engagement, leadership and coordination.

We use robust epidemiological methods, including scoping reviews, health facility surveys, key informant interviews, and group model building workshops to address the question mentioned above. Importantly, by actively engaging a diverse range of cholera stakeholders, including community members, healthcare professionals, government and non-government staff, we are likely to make sustainable progress towards cholera control.

“

My aspiration is to contribute to cholera control using effective and sustainable methodologies”



CARINA KING

Associate Professor,
Infectious Diseases Epidemiologist

My research focuses on paediatric pneumonia and specifically on improving diagnosis in low-resource context. Pneumonia is the leading cause of infectious child deaths globally, and yet we lack point of care diagnostic tools that are both sensitive and specific, and which are designed with children and healthcare workers as end-users in mind.

So in my work, we are exploring how we can use both new (e.g. AI algorithms) and existing technologies (e.g. pulse oximetry) to improve case management in children with respiratory illnesses, and ultimately improve survival. A key foundation in this, and one of the things I love most about my job, is having wonderful collaborative partnerships – which bring together biomedical engineers and manufacturers, clinicians, communities and public health expertise.

“

We explore how new and existing technologies can improve case management in children with respiratory illnesses”





“

It has been an awesome experience since my first day as a doctoral student at the Department of Global Public Health in Karolinska Institutet. The support, opportunities, and commitments demonstrated by the departmental staff towards capacity building and career development of young researchers have been amazing. The teams here are great, and the environment is friendly and stimulating for learning.”

Bakare Ayobami Adebayo

Doctoral student



“

As a doctoral student at the Department of Global Public Health, I am introduced to the complex world of global health research and policy – always with excellent support from my supervisors. It has given me the opportunity to learn from talented colleagues from many different backgrounds and to deeper understand health and health systems in ways I could previously only imagine!”

Anna-Theresia Ekman

Doctoral student

“



I find studying at KI is a once in a lifetime experience for a young doctor from a developing country like me. I believe that the knowledge I have gained here will help me improve the health care quality where I live. As a clinical doctor, there are certain challenges for me to do research. However, I always have unlimited support from my supervisors, mentor and colleagues at the Department of Global Public Health. They have become my second family away from home."

Hang Tran
Doctoral student

“



For a doctoral student, the Department of Global Public Health provides a unique learning environment. Fellow students, lecturers, supervisors and other researchers provide support, guidance and direction. It is a world-leading institution and gives you the tools to excel within the exciting field of public health."

Daniel Helldén
Doctoral student

Case Management and Emergency Care

There is a paucity of emergency care clinical research in low- and middle-income countries despite its substantial potential to impact overall morbidity and mortality. Our research ranges from clinical trials to health worker interventions and the use of new technology to inform management guidelines for different conditions, with the aim to improve patient care in resource constrained setting. Our projects are done in collaboration with health workers and researchers in the study settings, to increase the project relevance and impact.

Research areas

- Potentials for implementing emergency assessment, triage and treatment programs within primary health centres.
 - Exploring clinical progression across the referral pathway for sick children and factors affecting care-seeking decisions made by guardians.
 - Assessing risk factors for hypoglycaemia and the impact of changing the blood glucose concentration cut off for hypoglycaemia treatment.
 - Clinical trials to identify optimal treatment for severely sick children with low blood glucose concentrations.
 - Quality of hospital care for children and newborns and specific gaps in need of attention/interventions.
 - Assessing the extent to which community-based care for children has led to a more equitable distribution of healthcare services in relation to need.
- Determine the impact of an integrated training and mentorship approach to the introduction of pulse oximetry and enhanced sustainable oxygen systems on pneumonia case fatality rates in children.



4.8% is the median case fatality rate in paediatric emergency departments in low- and middle-income countries.



Collaborations

- GlaxoSmithKline
- Johns Hopkins University, USA
- London School of Hygiene and Tropical Medicine, UK
- Malawi College of Medicine
- Malawi Ministry of Health
- Malaria Consortium
- Sahlgrenska University Laboratory, Sweden
- Save the Children
- SciLifeLab, Sweden
- State Primary Health Care Board Jigawa State, Nigeria
- The Parent and Child Health Association, a Malawian NGO
- Turku University Hospital, Finland
- University College London, UK
- University of Ibadan, Nigeria
- University of Melbourne, Australia

Find more information at ki.se/en/gph/research-projects

Examples of research projects

- *EREMISS*– Community cohort study assessing the impact of hypoxemia and hypoglycemia on outcomes for sick children
- *SugarFact Trial* – Randomized controlled trial comparing the survival outcomes in severely sick children depending on treatment cut-off level for hypoglycaemia
- *GlucELB Trial* – Randomized controlled trial comparing the incidence of post admission glycemic variability and electrolytes derangements between different treatments provided to severely ill children with low blood glucose levels and hypoglycaemia
- *INSPIRING Jigawa* – A cluster randomised controlled trial of a whole systems empowerment intervention to reduce child pneumonia and improve child survival.

Technology and Innovation

Innovation aimed at improving the lives of children is necessary to achieve health equity and SDG 3. In resource-limited settings, novel technologies and rapid diagnostics have the potential to completely change the way diseases are diagnosed when cost, portability, ease of use, multiplexing ability or accuracy are no longer insurmountable obstacles. We aim to understand how novel technologies can directly benefit patients seeking care and lead to more targeted treatments. Our network consists of an interdisciplinary global team of researchers from low and high-income countries with expertise ranging from medical science, paediatrics, engineering and epidemiology.

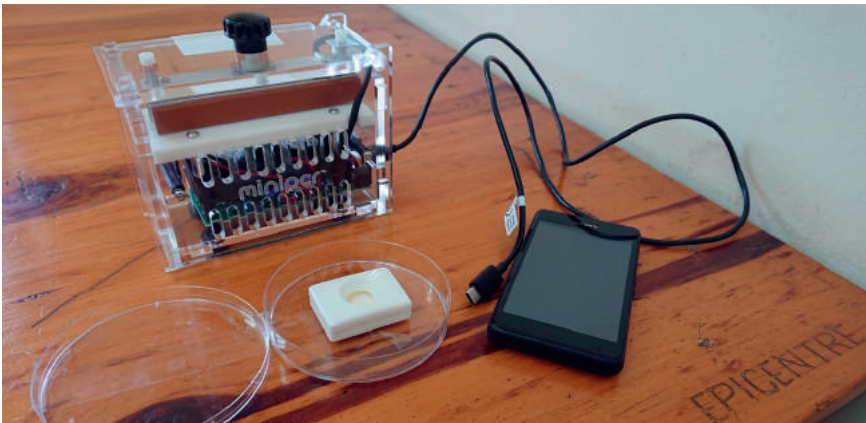
Research areas

Together with end-users, we work in equal partnership using human centred design approaches to find the most appropriate, affordable and scalable solutions.

Ultimately, our research is beyond the product-centric view of medical diagnostics and technology, and focuses instead on the completion of the test-and-treat cycle.

Our research areas include:

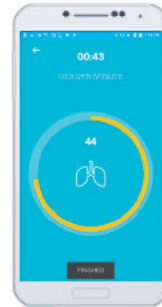
- Novel paediatric diagnostics for infectious disease
- Human-centred design innovation
- Frugal innovation
- Point-of-Care diagnostic research
- Paediatric infectious disease research



An example of a portable test developed by the PI-POC team, at the Epicentre Laboratory in Uganda.



Pulse oximetry is a noninvasive test that measures the oxygen saturation level of your blood.



Pulse oximetry and electrocardiography are rarely accessible in low- to middle-income settings. NeoTap Life Support is a free of charge app for training and assessment of heart rate during neonatal resuscitation.

Collaborations

- European Centre for Disease Prevention and Control
- Kawempe National Referral Hospital, Uganda
- KTH Royal Institutet of Technology, Sweden
- Johns Hopkins University, USA
- Jordan University of Science and Technology
- Mbarara University of Science and Technology, Uganda
- Malaria Consortium
- Médecins Sans Frontières (MSF) Epicentre laboratory, Uganda
- Oulu University, Finland
- SciLifeLab, Sweden
- UNHCR
- UNICEF
- University of Bergen, Norway
- VTT Finland

Example of research projects

- *The paediatric infection – point of care (PI-POC)* – researches novel methods for improving and strengthening the differential diagnosis of suspected childhood CNS infections in low-income health systems.
- *AIRR* – This study aims to develop an automated respiratory rate counter using artificial intelligence (AI) interpretation of existing videos from children with and without pneumonia in Malawi, Cambodia and Ethiopia.
- *Project: NeoTap* – This project evaluated a free-of-charge smartphone application, NeoTap Life Support (NeoTapLS), recording heart rate with a screen-tapping method bypassing mental arithmetic calculations.

Find more information at ki.se/en/gph/research-projects

Infectious Diseases and Outbreak Control

Our research team works with infection and immunology, through clinical, experimental, epidemiological, and public health research on pneumonia, cholera and diarrhoeal diseases, measles, HIV/AIDS, COVID-19 and antimicrobial resistance. Additionally, we aim to evaluate and explore risk factors for outbreaks of infectious diseases, as well as implement multi-sectoral interventions for preventing infections within the context of child health and the SDGs. To generate new knowledge and ideas, we work with multiple partners worldwide to promote collaboration among researchers, policymakers, and various stakeholders.



Workshop with community stakeholders discussing barriers and problems to implement cholera interventions in Bauchi, Nigeria.

Research areas

- Exploring the barriers and facilitators which influence the implementation of existing cholera interventions and diarrhoeal management in fragile states.
- Improving surveillance and understanding of the distribution of resistant microorganisms (bacteria, viruses, fungi, protozoa).
- Identifying the factors contributing to common childhood infections, and specifically pneumonia, and implementing interventions to reduce poor outcomes.
- Support strategies, Enhanced Treatment Support and Conventional Treatment Support, in relation to drug resistance and virological treatment failure for children and adolescents with HIV/AIDS on anti-retroviral treatment.
- Assessing the prevalence of antibody production against SARS-CoV-2 among children of different ages.



Children in the street collecting water in north Nigeria where research on cholera interventions is conducted.

Collaborations

- Children hospital 1 and 2, Ho Chi Minh City, Vietnam
- Childrens hospitals in Quan Ninh and Hai Phong, Vietnam
- Ministry of Health of Vietnam
- Hanoi Medical University, Vietnam
- Nigeria Center for Disease Control
- UNICEF
- University of Kinshasa, DRC
- Vietnam National Childrens Hospital

7%

of children born alive in low-income countries die before their fifth birthday and infectious diseases are the leading causes of death.

Research projects

- *Cholera in Nigeria* – Systematic study of the implementation of existing cholera interventions.
- *Measles in Vietnam* – A controlled study on risk factors for future Measles outbreaks.
- *Childhood infections in the DRC* – explores factors contributing to childhood infections and poor outcomes.
- *HIV-Chi* – assesses the effect of peer support to children and adolescents with HIV.
- *Combating CREs in ICU* – 9-step platform to combat multi-resistant bacteria in ICUs.
- *Immune development in children and adolescents following infection with SARS-Cov-2.*

Find more information at ki.se/en/gph/research-projects

Newborn Care

The newborn baby is a vulnerable human that needs attention, healthy or sick, premature, or full term. In the Newborn Care research team, the aim is to find solutions surrounding the birth and the baby's first month with follow up later in life. Our work is focused on the national and international global perspective, with many international collaborations. All projects aim to raise the quality of the care surrounding the baby and its mother.

Research areas

- In Uganda and Vietnam we have several projects that focus on improved practice during neonatal resuscitation, exploring the benefits of laryngeal mask airways versus face mask and intubation and tools for heart rate assessment, with the aim of reducing death or severe injuries due to neonatal asphyxia. Projects include training of midwives on site and through telemedicine and implementation of international guidelines.
- We have developed and evaluated a new MHealth applications for free download for health staff performing neonatal resuscitation in both high- and low-resource settings, NeoTap (www.tap4life.org).
- In Vietnam we have projects on usage of phase-changing materials for neonatal hypothermia treatment in patients with newborn asphyxia. Furthermore, we have projects on monitoring and treatment of neonatal sepsis and transmission of superbugs between mother and the newborn child, including new ways to identify diseases and injury. The aim is to identify and start treatment early to decrease risk for future impairments.



Neonatal resuscitation training in Uganda.



Laryngeal mask airway and face mask for ventilation of the newborn child.



Newborn baby with NeoBeat heart rate monitor (Laerdal Global Health) at PhuSan Hospital, Vietnam

Collaborations

- Hanoi Medical University, Vietnam
- Kawempe National Referral Hospital, Uganda
- Makerere University, Uganda
- Medical University of Vienna, Austria
- National Children's Hospital, Vietnam
- Other Swedish KI departments
- PhuSan Obstetric Hospital, Vietnam
- St Georges University, UK
- Tap4Life non-profit organization (Tap4life.org)
- University of Bergen, Norway
- University of Padova, Italy

Find more information at ki.se/en/gph/research-projects

Examples of research projects

- *NeoSupra* a phase III trial on laryngeal mask airway versus face mask including over a 1000 resuscitations.
- *NeoSpirit projects* exploring laryngeal mask airway versus intubation in neonatal resuscitation.
- *REMOTE*: REal-tiMe pOint of care Telemedical simulation-based and clinical Education.
- *Neonatal Hypothermia with PCM*: Phase-changing material mattress for hypothermia treatment in asphyxiated newborns in hospital and during transportation.
- *NeoObs*: NEONatal OBServational studies on neonatal sepsis, transmission of AMR between mother and newborn child.

Child development

It is estimated that around 100 million children in the world are affected by developmental delay or disabilities. Most of these children live in low- and middle-income countries where risk factors such as malnutrition, perinatal complications and infectious diseases are common. When we understand more about the situation for children living with disabilities, we can formulate inclusive policy as well as targeted early intervention. Our research focuses on specific types of developmental disabilities, such as cerebral palsy and intellectual disability, as well as general developmental delay and disability. We are contributing to closing the knowledge gap by producing prevalence data and developing interventions

Research areas

- In Sierra Leone, we utilise household survey data to better understand the spectra of developmental disability among children. We are also able to look at living conditions, risk- and resilience factors.
- In Uganda, research on neonatal complications and neurodevelopment is conducted to establish the prevalence of brain impairment and associated factors among young infants.
- Research in Uganda also includes large-scale population-based studies on children with cerebral palsy. Investigating prevalence, functional impairments, access to services, mortality and functional development.

We have developed and implemented the following interventions:

- A goal-directed support programme for wheelchair donations
- The Akwenda cerebral palsy programme, a multicomponent community based intervention

100

million children in the world are affected by developmental delay or disabilities.



Part of the research team implementing the Akwenda intervention programme for children and youth with cerebral palsy in rural Uganda.



Community meeting where the CURIE team discuss the research projects findings and ways forward for families with children with cerebral palsy, data collectors and local stakeholders.

Collaborations

- FOCUS1000 in Sierra Leone focus on the crucial period in a child's life: the first 1000 days and has extensive experience from child and public health research.
- The Iganga-Mayuge Health and Demographic Surveillance site in Uganda provides a platform for community oriented epidemiological and operations research and research training.
- The Akwenda-CP programme was developed by international experts, local therapists, caregivers of children with CP and the NGO Malamulele Onward in South Africa.
- Makerere University, Uganda

Research projects

- *Cerebral palsy in Uganda (CURIE)* – Exploring risk factors, interventions and lifesituation of children with Cerebral Palsy.
- *Understanding childhood disability through large household survey data* – Increasing knowledge on children living with functional difficulties and symptoms reflecting neurodevelopmental disorders.
- *Neonatal complications and neurodevelopment* – aims to establish the prevalence of brain impairment and associated factors among young infants in Eastern Uganda.

Find more information at ki.se/en/gph/research-projects



Children with cerebral palsy in rural Uganda receiving wheelchair donations, as a part of a collaboration of the CURIE project and the charity Walkabout foundation.

Adolescent mental health and well-being

Globally, adolescent mental health and well-being constitute an enormous challenge. According to the World Health Organization, one in seven 10-19-year-olds experiences a mental disorder, accounting for 13% of the global burden of disease in this age group. Moreover, depression and anxiety are among the leading causes of illness and disability among adolescents, to which the Covid-19 pandemic is contributing. We are undertaking a programme of research and action to understand why, despite the large burden, adolescent mental health and well-being has received limited attention and resources.

Our research

Our aim is to increase knowledge of the political economy of adolescent mental health and well-being globally and in selected countries to inform decision-making, reduce fragmentation among key actors and contribute to increased investments in adolescent mental health for greater impact at scale. The objectives are to investigate adolescents' and other key stakeholders' perceptions of adolescent mental health and well-being globally in terms of a) the priority level, b) the problem definition and positioning, and c) governance and coalition-building among stakeholders, and how this influences priority-setting and collective action.

Current collaborators

- Brain and Mind Institute, Aga Khan University, Pakistan and Kenya
- Johns Hopkins University, USA
- Makerere University, Uganda
- Norwegian Institute of Public Health
- Stellenbosch University, South Africa
- UNICEF Sweden
- University of Bergen, Norway
- University College London, UK
- University of the Western Cape, South Africa
- University of Nairobi, Kenya
- University of São Paulo, Brazil



Research projects

- *Political Economy of Adolescent Mental Health and Wellbeing* – identifying barriers to scaling up collective action for adolescent mental health and wellbeing.

Find more information at ki.se/en/gph/research-projects



Mariam Claeson

Public health specialist who has worked internationally for over 30 years on global public health challenges



Adolescent health and well-being remain a weak and neglected area in the continuum of reproductive, maternal, newborn, child and adolescent health, across the life-course. Our team wants to contribute to prioritise this neglected age group in global health. We ask the political economy question of why adolescent mental health is not getting the attention and resources corresponding to the magnitude of the problem, as compared to other topics of global importance?"



Stefan Swartling Peterson

Professor of Global Transformations for Health

"My vision is sustainable health for people and the planet. By addressing the social, commercial, and political determinants of health, children can have optimal health and development now, and also a liveable future. They are rarely asked, but children and teenagers must be involved in the decisions that affect their lives and will affect them in the future. The sustainable goals of Agenda 2030 must be based on the children's perspective."

Multi-sectoral and policy research

The 2030 Agenda provides an ambitious and holistic roadmap for sustainable development and health. However, with less than 10 years to go we are off track to reach its goals. To improve implementation and facilitate multi-sectoral collaboration, there is a critical need for interdisciplinary research addressing policy implementation and the interactions between goals, sectors and health determinants. Therefore, we aim to provide novel and impactful evidence on these relationships using cutting-edge health policy and statistical methods.

Research areas

- The role of Sustainable Development Goal interactions for child health in Cambodia
- The impact of non-health determinants on child mortality and morbidity in Cambodia and Uganda and globally
- The impact of climate change on child health
- Barriers and facilitators of implementing evidence-based policies to address the growing burden of non-communicable diseases
- The need for global governance reforms to support implementation of the Sustainable Development Goals



Multisectoral discussion on Sustainable Development Goals in DRC and Somalia, part of Centre of Excellence for Sustainable Health.



Sustainable Development Goals workshop in Uganda.

Collaborations

- Bilkent University, Turkey
- Duke University, USA
- London School of Hygiene and Tropical Medicine, UK
- Makerere University, Uganda
- Malaria Consortium
- Royal University of Phnom Penh, Thailand
- Umeå University, Sweden
- University of Seattle, USA

Find more information at
ki.se/en/gph/research-projects

Research projects

- *Impact of non-health determinants on child health*

This project aims to determine the impact of non-health sector factors on child health in the Millennium Development Goal era, using Cambodia and Uganda as case studies.

- *The politics of prevention*

This project aims to understand barriers and facilitators of implementing evidence-based, cost-effective policies to prevent tobacco smoking, harmful use of alcohol, poor diet and insufficient physical exercise. This will be done through reviewing implementation of 'Best Buy' policies, engaging stakeholders and modelling impact.

Contact

Want to learn more about our research or interested in joining our team?
You are most welcome to contact our team leader Tobias Alfvén, tobias.alfven@ki.se

For more information about our activities, news, latest research and team members
please visit our website ki.se/gph/globalchildhealth

For donations, use KI's SWISH number 123 202 32 08 or the bank account 5310-6217
and write K9 (the code of our Department) and the name of the team leader.

Want to enquire about the possibilities to do an internship or Master at our Department?
Look for ads at KI home page or contact our team leader directly.

For questions about PhD education at the Department of Global Public Health,
contact the doctoral education administration, fu-adm@phs.ki.se

The Global Child Health and Sustainable Development team



Department of Global Public Health
Karolinska Institutet
171 77 Stockholm, Sweden

Phone +46 8 524 800 00 (switchboard)

Email sekretariat.gph@ki.se

ki.se/gph/globalchildhealth

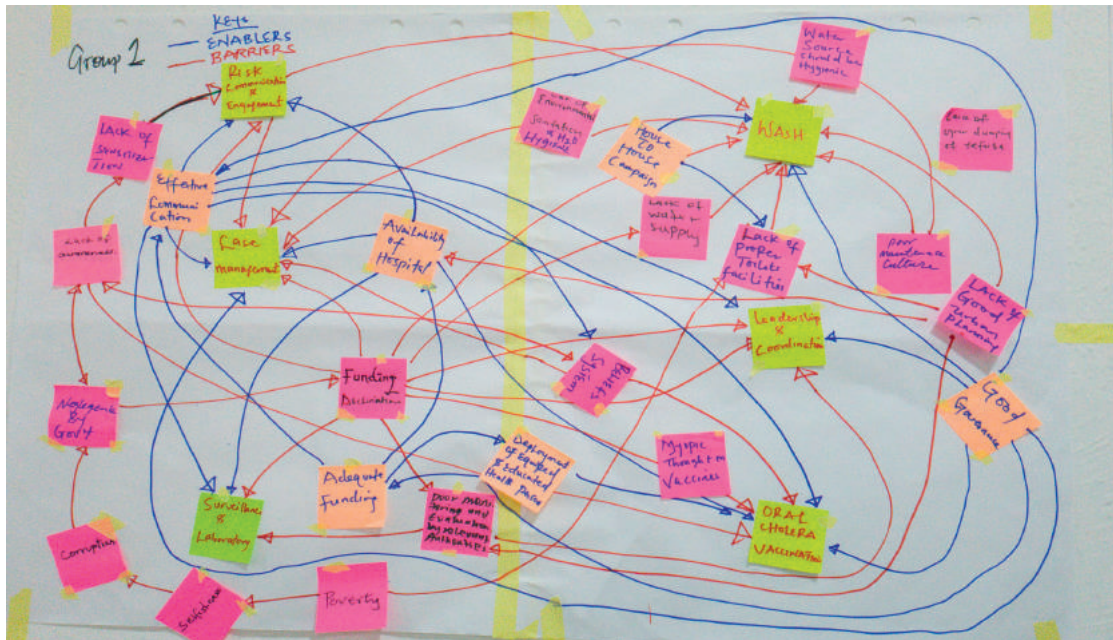
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Karolinska Institutet (KI) is one of the world's leading medical universities. Our vision is to advance knowledge about life and strive towards better health for all. As a university, KI is Sweden's single largest centre of medical academic research and offers the country's widest range of medical courses and programmes. Since 1901 the Nobel Assembly at Karolinska Institutet has selected the Nobel Laureates in Physiology or Medicine.



**Karolinska
Institutet**

Karolinska Institutet
SE-171 77 Stockholm
Phone: +46 8 524 800 00
ki.se