

KEMRI | Wellcome Trust

PROGRAMME PROFILE



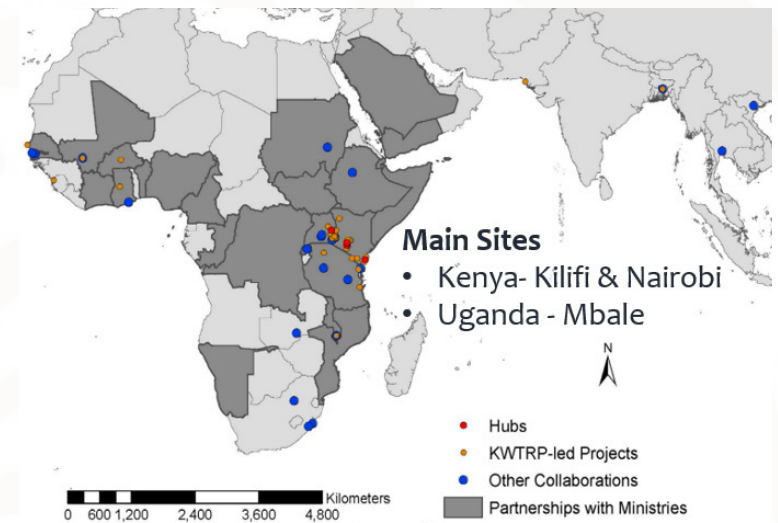
WHO WE ARE

The KEMRI-Wellcome Trust Research Programme (KWTRP) is a partnership between the Kenya Medical Research Institute (KEMRI), Wellcome, and the University of Oxford. Established in 1989, the Programme has evolved from conducting research in the immunology and epidemiology of malaria in 1990's, to a world class research Programme conducting multi-disciplinary research that spans molecular biology to health systems and policy research. We are physically located in Kilifi at the KEMRI Centre for Geographic Medicine Research Coast-CGRMC, in Nairobi in Kenya, and in Mbale, Eastern Uganda, and have research collaborations globally.

Our mission is to conduct high quality, purposeful, and relevant research in human health, building sustainable research capacity and leadership. We undertake cutting-edge and novel research relevant to national, regional and global needs. Alongside research we have a focus on research capacity development, to support and nurture the next generation of African researchers, as well as community, public, and policy engagement to enhance the relevance and impact of our research work. Our research leverages key platforms that include:

- The Kilifi Health and Demographic Surveillance Site (KHDSS)
- State-of-the-art laboratories
- A clinical trials facility (CTF)
- A clinical team in Kilifi County hospital
- The Clinical Information Network (CIN) - A surveillance network of 25 Kenyan hospitals in 19 counties in Kenya
- An engagement team (community, policy and public)

GLOBAL FOOTPRINT



PROGRAMME BY NUMBERS



Over **800 Staff member**



250 Peer reviewed publications per year



50 studentships per year



20 PhDs graduated per year



OUR RESEARCH

Our research aims to have impact throughout the translational pathway: broad systems approach to transform the delivery of care (e.g. “Health Systems”); translational work to reduce mortality and morbidity with evidence-based prevention or treatment (e.g. “Vaccines” and “Clinical Care”); and discovery research aimed at the next generation of interventions (e.g. “Pathogen Biology”). Our research is characterized by a multidisciplinary approach with a focus on five thematic areas:

- Pathogen biology
- Vaccines
- Clinical research
- Population health
- Health systems research

Pathogen Biology

Our pathogen biology theme employs a discovery approach to tackle the challenges posed by high burden infectious diseases, by advancing the understanding of host responses, host-pathogen interactions, and the mechanisms for disease transmission and resistance. This work leverages our state-of-the-art molecular and immunological laboratory facilities in Kilifi, and three unique resources:

- A controlled human infection model platform
- Active surveillance of a 20-year longitudinal cohort of children acquiring immunity to malaria and other pathogens
- Primary and secondary care febrile episode surveillance
- A unique biobank facility that contains over 1 million samples linked to well-curated epidemiological and clinical datasets, and pathogen genomics data

We consider pathogen biology from the perspective of the host response; direct properties of the pathogen; and the role of the vector in transmission.

Health Systems and Research Ethics

Our health system research work aims to generate evidence to guide the development of equitable, efficient, quality, ethical, and responsive health systems. Research on health system spans health policy and systems analysis (HPSR), health economics, health services and implementation research, and empirical ethics. The HPSR team applies systems thinking approaches and complexity theories in examining how the governance, organization, functioning, and actor dynamics can promote responsive and resilient health systems. Our Health economics research seeks to examine how LMICs can make sustainable progress towards Universal Health Coverage (UHC), while enhancing the equity and efficiency of health systems. Our health services & implementation work examines how the effectiveness and safety, quality, and responsiveness of healthcare delivery can be optimized in resource-constrained settings, with a focus on paediatric and neonatal care in public hospitals. Lastly, the empirical ethics team seeks to understand how the ethics of research in LMICs could be enhanced and examine the responsibilities of research institutions in situations of increasing vulnerabilities, and inequities.

Vaccines

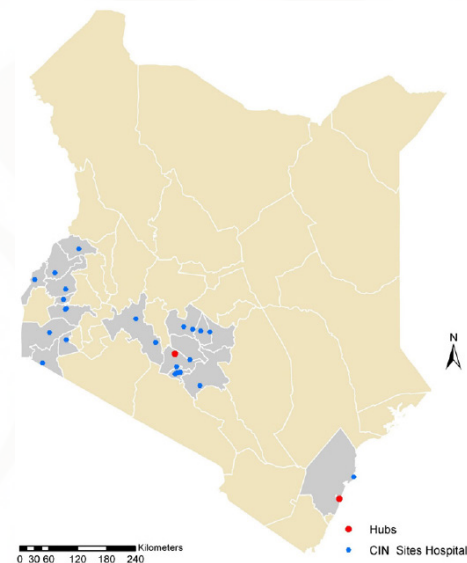
Research under our vaccines theme aims to accelerate the development, access, and uptake of the most effective vaccines against local and global health priorities. We do this by employing in-house multi-disciplinary capabilities in epidemiology, immunology, molecular biology, clinical trials, and expertise in health economic evaluation, and health systems. We leverage our longstanding community and public engagement platform and a broad network of stakeholders within the vaccines ecosystem to achieve translational impact against infectious diseases. We develop the next generation of vaccinologists through a dedicated workforce development program.

Clinical Research

Our clinical research aims to generate evidence to improve care and outcomes for sick children. Research in this theme tackles major global health challenges that include malnutrition, antimicrobial resistance, and other high burden infectious diseases among paediatrics that include malaria and pneumonia. We also focus on research around neonatal care, critical care, and research in neurodevelopment disorders, mental health and research on Sickle Cell Disease. This research is supported by an integrated surveillance platform linking data from our health and demographic surveillance system (HDSS), clinical surveillance, and laboratory platforms; our clinical trials unit (CTU) in Kilifi, and the clinical research platform in Mbale, Uganda. The research also leverages the Clinical Information Network (CIN), which is a hospital surveillance network of 25 public hospitals across 19 counties in Kenya (figure 1), where we collect routine data on admissions, care and outcomes in paediatric, neonatal, and adult wards.

Our clinical research team in Kilifi also supports clinical care in the high dependency unit (HDU) and pediatric ward at the Kilifi County Hospital.

Figure 1: The Clinical Information Network (CIN)



The CIN is a partnership between KWTRP, Kenya Paediatric Association, MoH and County Hospitals. It provides Comprehensive inpatient data from 24 county hospitals characterized by:

- Over >250,000 Paediatric Episodes
- Over 160,000 Neonatal Episodes
- Over 70,000 Adult Episodes

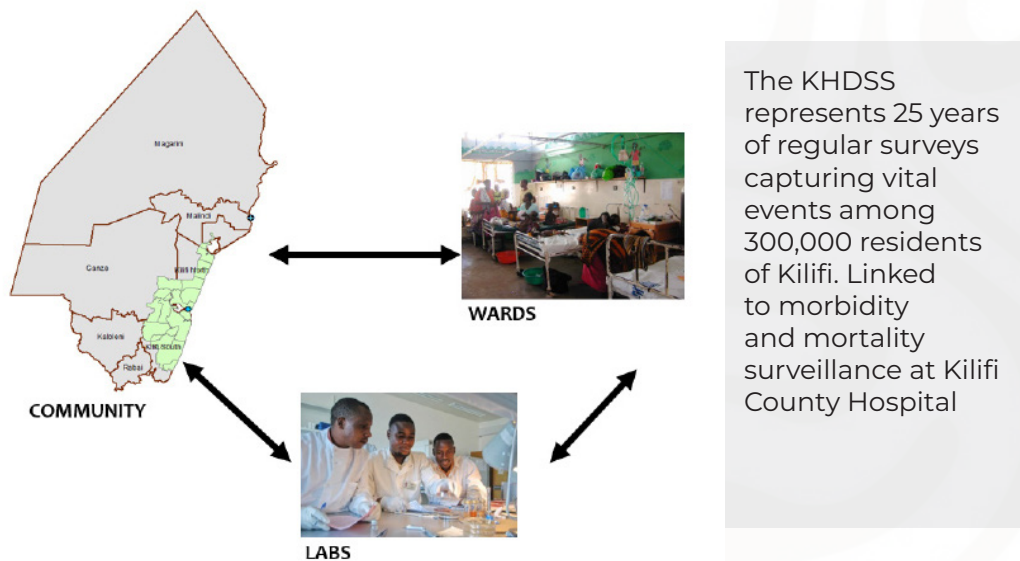
The CIN is a shared resource for audit and feedback, health systems research, surveillance/epidemiology, and pragmatic clinical trials.

Population Health

The Population Health theme aims to provide timely and actionable evidence on the infectious and non-communicable conditions that account for the largest burden of disease in Africa. Under this theme, we conduct research that spans genetic, vaccines, and cardiovascular disease epidemiology, population and health impact surveillance, and pathogen epidemiology and omics. Work under this theme leverages highly adaptable platforms in order to generate data that is used to conduct descriptive epidemiology, measurement of the coverage, safety and effectiveness of interventions, as well as modelling the dynamics of various threats to health including climate change.

A key platform is the Kilifi Health and Demographic Surveillance System (KHDSS) which is an integrated surveillance and research platform capturing vital events and hospital admissions among 300,000 residents of Kilifi County, established in 2000 (figure 2).

Figure 2: The Kilifi Health and Demographic Surveillance System (KHDSS)





CAPACITY DEVELOPMENT

The Programme has a deliberate and strategic approach for building local research capacity through a framework that aims to attract, train and retain young Africans to research. Engagement starts at School Leavers Attachment scheme which aims to influence career choice among local secondary school graduates by exposing to research and researchers before they start university. The graduate attachment scheme provides opportunities for undergraduate students to experience science in practice. At the next level, training is provided in collaboration with Pwani University through a Postgraduate Diploma course to graduates who demonstrate high potential at completion of their first degree. The course lays a strong emphasis on experiential learning and serves as strong prelude to Masters and PhD training that is provided in conjunction with local and international universities. Finally, to retain those we are training in Africa and in research that is relevant to issues affecting Africa we provide strong support and mentorship postdoctoral early career and mid-career researchers. Across all the scheme the quality of our training is guaranteed through quality supervision, mentorship, generic skills training, financial and operation support and subscribe to principal of equity, diversity and inclusivity.

COMMUNITY, PUBLIC AND POLICY ENGAGEMENT

The Programme has an elaborate community, public and policy engagement strategy which seeks to ensure mutual understanding of health research priorities between community/stakeholders/policy makers on one hand, and researchers/funders on the other hand. We build this mutual understanding through engaging with a wide range of the Programme's Stakeholders, organized into three broad areas:

- Community and stakeholder engagement
- Public engagement
- Policy engagement

Community engagement aims to build mutual understanding and trust between the community and stakeholders directly involved in research and the Programme. Public engagement includes an elaborate School Engagement Programme (SEP) that promotes science and research among primary, secondary and university students in Kenya. The Programme has also invested in public engagement initiatives aimed at engaging publics not directly involved in research including institutional stakeholders, media, and members of the public. Policy engagement ensures that research evidence generated by the Programme feeds into local and international policies by actively engaging with a broad range of local, national and regional policy stakeholders right from the conception, implementation, and dissemination stages of research. The objective of KWTRP's policy engagement strategy is to develop and nurture partnerships that enhance and support evidence informed decision making.





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