

THE CENTRES FOR ANTIMICROBIAL OPTIMISATION NETWORK-UGANDA (CAMO-NET UGANDA)



BACKGROUND

Antimicrobial resistance (AMR) is a leading cause of morbidity and mortality globally and poses a major threat to global health security. Drug resistant infections are associated with poor treatment outcomes and higher costs of healthcare. Of note, low and middle-income countries are disproportionately affected by AMR. An effective global AMR response generation and use of findability, accessibility, interoperability, and reusability (FAIR) data.

DESCRIPTION

The Wellcome trust is supporting global efforts to contain AMR. As part of these efforts, Centres for Antimicrobial Optimisation Network (CAMO-Net) is a global collaborative research network focused on antimicrobial optimisation for use in humans. The project is underpinned by the values of equity, local leadership, co-production of activities, knowledge mobilisation, mutual cross-regional learning, training, capacity, and capabilities strengthening, and output sharing. Its vision is a world where the appropriate, evidence-based use of antimicrobials is commonplace, supported by equitable availability and accessibility. CAMO-Net's mission is to complement and enhance the existing ecosystem of global programmes designed to alleviate the global burden and impact of antimicrobial resistance (AMR) and poorly treated infections by creating and nurturing a sustainable and equitable ecosystem for global research to optimise the use of antimicrobials in humans. The project will be implemented between April 2023 to March 2026. The project target audience includes health workers, researchers, policy makers, general population, government actors, academic, innovators among others.

OBJECTIVES AND EXPECTED OUTCOMES

The objective of CAMO-Net is to address the global impact of AMR on human health through optimising antimicrobial use by establishing a sustainable global research ecosystem, developed across low- and middle-income countries (LMICs) and high-income countries (HICs). The guiding objectives will be delivered through a robust capacity strengthening and knowledge mobilisation programme across the network, providing reciprocal South-South and North-South as well as urban-rural contextual learning and development.

SPECIFIC OBJECTIVES:

- 1** To have a comprehensive, contextual understanding of situational data in each National Hub on the progress of interventions to tackle AMR in human populations to identify opportunities to address existing gaps/challenges, with respect to: (i) technology and innovation for optimised prescribing; (ii) context, culture, and behaviour; and (iii) medicines management.
- 2** To Harness the power of data (quantitative and qualitative) through strategic and targeted studies to generate new knowledge related to optimising antimicrobial use in human populations.
- 3** To Implement co-produced, contextually fit, and sustainable solutions to optimise antimicrobial use targeting innovation, systems, and behaviours
- 4** To Evaluate interventions and strategies targeting optimised antimicrobial use through an intersectional approach.



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KEY PROJECT RESEARCH THEMES

- 1 Technology and innovation** for optimised prescribing, which includes (i) artificial intelligence (AI), including machine learning, for individual and population-level clinical decision support, data and diagnostics, and integrating host and pathogen dynamics; (ii) point of care (PoC) and laboratory-based diagnostics, lab-on-chip technology, antimicrobial biosensing and drug sensing for medicine quality; (iii) use of data, including standardised pooling; and (iv) innovation adoption and implementation.
- 2 Context, culture, and behaviours** which includes (i) organisational and individual behaviour change; (ii) health-seeking and health provision behaviours; and (iii) intersection of the socio-cultural determinants of health and health literacy with AMR.
- 3 Medicines management**, which includes (i) supply chains and distribution, addressing and forecasting shortages; (ii) prescribing systems and monitoring frameworks; (iii) quality assurance testing; and (iv), addressing comorbidities, polypharmacy, and drug-drug interactions.
- 4 Essential data infrastructure**, nowhere in the world exists a collated and standardised repository for antimicrobial pharmacokinetic-pharmacodynamic (PK-PD) and other antimicrobial optimisation-related data. CAMO-Net will develop a sustainable open-source central data repository where data collected from multiple investigators and studies can be stored and curated for the longer term. Using PK-PD data as an entry point, the proposed CAMO Global Data Resource (CAMO-GDR) will enable data to be combined, analysed, and reanalysed. It will also facilitate high-quality studies, education, and training.

CAMO-NET DELIVERABLES

- 1** Integrated global approach to antimicrobial optimisation via a sustainable structure with global representation and leadership as well as shared learning.
- 2** New knowledge/information on antimicrobial prescribing and use.
- 3** National policy influence across each National Hub regarding antimicrobial optimisation across technology innovation; context, culture, and behaviours; and medicines management.
- 4** CAMO-GDR as an open resource with curated data and models to underpin an understanding of the emergence of AMR.

FOUNDATIONAL NETWORK ACTIVITIES

The main foundational activities of CAMO-Net, are:

- Knowledge mobilisation; monitoring evaluation and learning; and reflection
- Policy engagement
- Global capacity strengthening: a training network.
- Development of a CAMO Global Data Resource

THE CAMO-NET CONSORTIUM

The consortium is made up of teams and institutions from Africa, Asia, Europe, and South America. CAMO-Net Uganda hub is part of the five sites (University of Liverpool and Imperial College London in the UK, the University of Cape Town in South Africa, the Infectious Diseases Institute in Uganda, Amrita Institute of Medical Sciences – Delhi and Kochi (AIMS) & Postgraduate Institute of Medical Education and Research (PGIMER) Chandigarh in India and the Fundação Faculdade de Medicina in Brazil) which form 'national hubs'.

WORK STREAMS UNDER THE CAMO-NET UGANDA HUB

1 RESEARCH WORK STREAM

The Infectious Diseases Institute, Makerere University (IDI) is developing a unique research programme within CAMO-Net, addressing antimicrobial in the context of HIV and TB, and the associated co-morbidity and polypharmacy. Specific research projects will include:

PROJECT 1

Investigating the patterns and trends in antibiotic prescribing among People Living with HIV (PLWH) enrolled in routine cohorts at the Infectious Diseases Institute Clinics, Kampala, Uganda

PROJECT 2

Innovative approaches to optimise antibiotic therapy in the context of HIV, and related co-morbidity and polypharmacy in an outpatient HIV clinic in Uganda.

PROJECT 3

Combatting Antimicrobial Resistance in Uganda: A Data-Driven Approach to Optimize Antibiotic Use and Improve Patient Outcomes.

2 CAPACITY STRENGTHENING WORK STREAM

IDI leads the project capacity-strengthening efforts, focusing on individuals, institutions, and the wider project network (CAMO-NET consortium partners). Approaches to capacity strengthening include curriculum design, fellowship program, tailored online and blended trainings and global workshops, online courses, placements, peer-to-peer seminars, and mentorships.



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