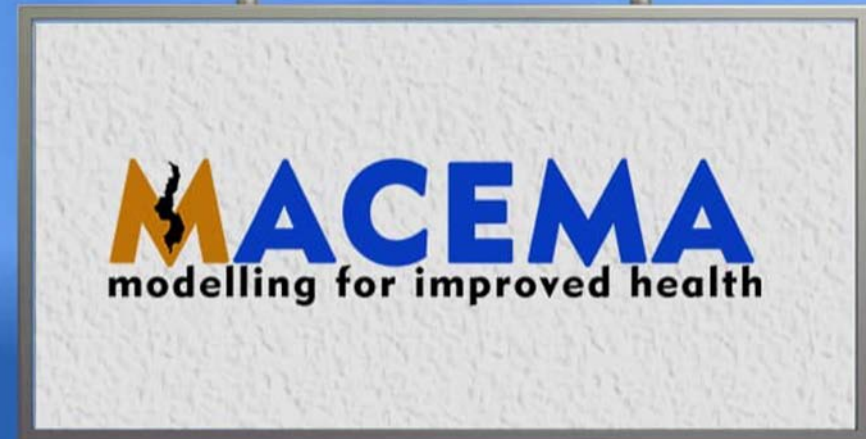# Can we contain disease outbreaks, cost?

Malawi Centre of Epidemiological and Mathematical Analysis(MACEMA)

Nicholas S.Adam

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Aren't these grand challenges for advances in LLMs?

Data?   Skill?   Tooling?   Infrastructure?

Malawi Centre of Epidemiological and Mathematical Analysis (MACEMA)

❖ Formed in Dec 2022

➢ Vision
  o To effectively use mathematical and statistical modelling in improving health in Malawi and beyond

➢ Goals
  o Improve surveillance systems for infectious diseases in Malawi and beyond
  o Develop an early warning system
  o Give policy directions on outbreak management

➢ Outcomes
  o High quality data platforms on infectious diseases in Malawi
  o Running surveillance and warning systems
  o Policy briefs and engagement documentations

MACEMA MEMBERSHIP

S/N	Name	Education Background	Projects
1	Nicholas S. Adam	PhD Cand, MSc, BSc (Biostatistics, Mathematics)	Modelling Boko Haram effects on Child Health indicators in Nigeria and Poliomylitis modelling in Malawi
2	Grace Wezzie Banda	PhD Cand, MSc, BSc (Mathematics)	Developing Surveillance Mathematical Model for Diarrhoea Analysis of Social Media on Information about Malaria Elimination Efforts
3	Ruth Vellemu	MSc, Bsc (Biostatistics, Mathematics)	Cluster-level intervention strategy for malaria in children aged 6-59 months in urban areas in Malawi: A geospatial modelling study
4	Paul Kaseka	MSc, BSc(Nursing)	Investigating the Significance of Malaria Microscopy on Negative Rapid Diagnostic Test Results of First Visit Malaria Suspects (not received LA within 30 days) in Malawi: An Evaluative Study of the Existence of Non plasmodium Species and Competence of Non laboratory Personnel on Point of Care Testing
5	Jeremot Masoambeta	Msc, BSc, BEd, Dip.Bed (Biostatistics, Mathematics)	Developing Surveillance Mathematical Model for Diarrhoea
6	Wongani Nyondo	MSc, BSc(Epidemiology, computer Science)	Has polio vaccination sufficiently eliminated poliomyelitis in Malawi after vaccination campaign?
7	Yolam Cosmas Kameme	MBBS, BSc, Dip.clin(Medical Science)	A simulation study forecasting an end to ongoing cholera epidemic in Dowa District, Malawi. What can we do better?
8	Masuzgo Pojogo	MSc, BSc (Epidemiology, Nursing)	Analysis of Social Media on Information about Malaria Elimination Efforts
9	Hope Gausi	BSc (Computer Science)	Support developing a website for information sharing and visibility on malaria and diarrhoea work
10	Andrew Mbewe	Dip. ICT, Cert. Educ	Support developing a website for information sharing and visibility on malaria and diarrhoea work and administrative works

Source of inspiration

- Inspired by works done by the following exisiting centres and research projects among others

    - ✓ South Africa Centre of Epidemiology and Mathematical Analysis (SACEMA)
    - ✓ Urban Malaria Project, Northwestern Malaria Modelling Lab (North Western University, USA)
    - ✓ Drakes Lab, Odum School of Ecology, University of Georgia, USA
    - ✓ Infectious Disease Epidemiological Modelling Unit (IDEMU-Mak), Makerere University
    - ✓ Centre of Epidemiology and Mathematical Analysis (CEMA), University of Nairobi

- Centers and research labs
    - Offering scientific mentorship on soem running projects
    - Offering financial support for running of the centre
    - Offered short trainings and PhDs mentoring for MACEMA members
    - Negotiating for collaborations

Thematic areas

- Diarhoreal diseases

- Urban Malaria

Other disease currently working on

- Polio

Our needs

- ➢ Finances: $3.5 million for 5 years

  - • Funding for the aligned activities in MACEMA 5 years implementation plan
    - ▪ Enhencement for human capacity (MSc & PhD)
    - ▪ Research dissemination activities (publication, conference attendance etc)

- ➢ Working collaborations

- ➢ Mentorship (website development, scientific mentorship and trainings)

Special thanks