Berhe Etsay Tesfay

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ABOUT ME

Public health expert and infectious disease epidemiologist with over a decade of experience in AMR surveillance, epidemiological modelling, bioinformatics, and global health research. Expertise in antimicrobial resistance (AMR), epidemiological data analysis, mathematical modelling, and machine learning. Proficient in whole-genome sequencing (WGS), metagenomics, R, Python, and applied epidemiology. Passionate about using computational and data-driven approaches to tackle AMR evolution, HGT, and microbiome-host interactions.

CORE SKILLS
- AMR Surveillance & Epidemiology - WHO GLASS, clinical & environmental AMR studies
- Bioinformatics & Genomic Analysis - WGS, metagenomics, plasmid tracking, HGT modeling
- Machine Learning & Mathematical Modeling - Lasso regression, predictive epidemiological modeling
- Data Science & Programming - R, Python, SQL, MATLAB, PowerBI
- Microbiome Research & AMR Evolution - Resistance fitness, competitive growth assays
- Clinical & Public Health Research – Global health, LMIC settings, outbreak investigation

EDUCATION AND TRAINING

11/09/2023 – 09/12/2024 Liverpool , United Kingdom
MRES IN TROPICAL HEALTH AND INFECTIOUS DISEASES RESEARCH (2023-2024) Liverpool School of Tropical Medicine (LSTM)

Wet lab methods, Whole-genome sequencing, AMR gene mobility, bioinformatics pipelines

Address liverpool school of tropical me, Liverpool , United Kingdom | **Website** https://www.lstmed.ac.uk/ | **Final grade** Merit (3.7) |

Level in EQF EQF level 7 | **Thesis** Molecular Characterisation and HGT of ESBL-Producing Bacteria in Infants born in hydom, Tanzania.

07/07/2015 – 21/12/2017 Harar , Ethiopia
MASTER OF PUBLIC HEALTH IN EPIDEMIOLOGY (2015-2017) Haramaya University

Website https://www.haramaya.edu.et/ | **Final grade** Distinction (3.82) | **Level in EQF** EQF level 7 |

Thesis Survival analysis if Multi-Drug resistant tuberculosis in Ethiopia, using retrospective data from the centralised national treatment centre

07/09/2008 – 19/10/2012 Jimma , Ethiopia
BSC IN CLINICAL/PUBLIC HEALTH OFFICER (2008-2012) Jimma University

Website https://ju.edu.et/ | **Level in EQF** EQF level 6

RESEARCH EXPERIENCES

AMR & Infectious Disease Research and Surveillance

Operational Research Coordinator, Médecins Sans Frontières (MSF) – South Sudan *(2023)*
- Led AMR surveillance and epidemiological modeling of disease outbreaks in South Sudan
- Conducted bioinformatics analysis of AMR gene in clinical settings of MSF hospitals
- Mental health models fit for societies that lay in long-laid war in South Sudan (Mixed methods exploratory study)
- HIV prevention and care social epidemiology study
- Leishmaniasis and brucellosis clinical trial studies

Epidemiologist & Data Analyst, Malaria Climate Anticipation Project (MAP) – *(2022)*
- Developed machine learning models for malaria forecasting and outbreak prediction using climate variables

Epidemiology Activity Manager, MSF – Bangladesh & South Sudan *(2019-2021)*
- Led AMR surveillance and outbreak investigations for cholera, diphtheria, dengue, and hepatitis E in Bangladesh and South Sudan
- Established community-based surveillance covering 100,000+ households in Bangladesh.
- Implemented AMR fitness assays and antibiotic resistance profiling in field hospitals, establishing Antibiogram
- Conducted multiple surveys, including AMR global PPS surveys and water and sanitation surveys.

CONFERENCES AND SEMINARS

04/11/2021 – 05/11/2021 ePoster presentation
IMED 2021-The 8th International Meeting on Emerging Diseases and Surveillance

16/11/2021 – 17/11/2021 ePoster presentation
⬚ ESCAIDE 2021 -European Scientific Conference on Applied Infectious Disease Epidemiology

10/10/2023 – 12/10/2023 Berlin - powerpoint presentation and Speaker
⬚11th Global Dialogue Platform on Anticipatory Humanitarian Action

● WORK EXPERIENCE

01/01/2022 – CURRENT Online/Maryland , United States
R PROGRAMMING INSTRUCTOR AND DATA ANALYSIS CONSULTANT APPLIED EPI

- Conducting R training for frontline epidemiologists, public health professionals and academicians (I have delivered more than a hundred R training sessions so far)
- Providing real-time support of outbreak analytics (eg. I have supported the ebola outbreak daily data analysis in Uganda)
- Preparing training and capacity-building materials for public health and epidemiology professionals

01/01/2023 – 01/08/2023 Juba, South Sudan
OPERATIONAL RESEARCH COORDINATOR MÉDECINS SANS FRONTIÈRES / DOCTORS WITHOUT BORDERS

- My role was coordinating operational research activities, identifying research areas relevant for humanitarian responses, and implementing operational research activities, data collection, data analysis, result writing, and dissemination. I was responsible for creating the national and international collaboration for the different orientations research studies. Some of the studies worked on include malaria climate modelling for anaticpatory action, post-kalazar dermal leishemaniasis self-healing clinical trial study, Brucellosis diagnostics clinical trial study, quality of health care mixed method study, social awareness of HIV mixed method study, and mental health care model exploratory study (mixed method study).

01/11/2021 – 30/03/2022 London , United Kingdom
HUMANITARIAN EPIDEMIOLOGY ADVISOR MÉDECINS SANS FRONTIÈRES / DOCTORS WITHOUT BORDERS

- I was a part-time epidemiology adviser for humanitarian missions with MSF (Doctors without Borders). My main responsibilities were supporting frontline humanatrain epidemiologists in steering the epidemiological activities, mentoring and coaching, identifying operational research areas, and providing technical support to the medical and paramedical management team in informed decision-making. In addition, I represented MSF in a high-level delegation of health sector coordination meetings.

15/10/2020 – 30/10/2021 Juba , South Sudan
HUMANITARIAN EPIDEMIOLOGY ACTIVITY MANAGER MÉDECINS SANS FRONTIÈRES / DOCTORS WITHOUT BORDERS

- I was the frontline field epidemiologist in South Sudan, flying between five projects to run epidemiological activities, mainly epidemiological surveillance in the community and health facilities, outbreak investigation and response, surveys and operational research, data analysis, dissemination and communication, training and capacity building, stakeholders engagement, outbreak advocacy, and supporting the evidence-based decisions. Among the main disease outbreaks that responded include the malaria epidemic, the leishmaniasis epidemic, the cholera outbreak, the yellow fever outbreak, the dengue outbreak, and the hepatatis E outbreak. I have successfully implemented the antimicrobial stewardship surveillance in the health facilities and conducted vaccination coverage, malnutrition, and water and sanitation coverage surveys in an internally displaced population camp.

07/07/2019 – 07/07/2020 Dhaka , Bangladesh
HUMANITARIAN EPIDEMIOLOGY ACTIVITY MANAGER MÉDECINS SANS FRONTIÈRES / DOCTORS WITHOUT BORDERS

- I served as the Epidemiology Activity Manager for the humanitarian emergency response during the Rohingya crisis in the Rohingya refugee camp in Bangladesh, the world's largest refugee camp. In this role, I implemented community-based surveillance covering more than 100,000 households, established an Epi-Alert response team to swiftly address outbreaks, and managed responses to over ten outbreak episodes, including cholera, diphtheria, dengue virus, hepatitis E, and measles.
- Additionally, I implemented mortality surveillance, home delivery surveillance, vaccination defaulter surveillance, and water and sanitation indicators surveillance for the same population. Besides, I have served as a main focal person for the epidemiology working group with more than thirty other NGOs since I had the largest surveillance team.

01/12/2018 – 30/06/2019 Adigrat , Ethiopia
LECTURE OF PUBLIC HEALTH EPIDEMIOLOGY ADI GRAT UNIVERSITY

- I was a lecturer of public health epidemiology and communicable disease control at Adigrat University, Ethiopia. Besides teaching, I have also taken on the role of academic research and community service projects, which I have contributed to the prevention of mother-to-child transmission of HIV through implementation research and health insurance introduction to rural communities in tigray. I have also introduced the "no tree shall die for paper" project, which greatly succeeded in introducing electronic-based data collection for researchers and students in the university and reduced the printing cost significantly and transformed the awareness for paper-free data collection.

01/08/2017 – 30/11/2018 Wardher - Somali region, Ethiopia

CLINICAL OFFICER- GENERAL CONSULTANT AT PRIMARY HOSPITAL MÉDECINS SANS FRONTIÈRES / DOCTORS WITHOUT BORDERS

- I have worked as a general consultant in a primary care hospital in Ethiopia. I was also a clinical trainer for Emergency Triage, Assessment, and Treatment (ETAT), cholera case management, severe acute malnutrition case management, surveillance of reportable diseases, and team leader of the clinical case management team. I was a mentor in obstetric clinical case management.

01/01/2013 – 30/07/2017 Wardher - Somali region, Ethiopia

CLINICAL OFFICER- MEDICAL DIRECTOR MINISTRY OF HEALTH - ETHIOPIA & DOCTORS WITHOUT BORDERS

- My main responsibilities include providing clinical consultations at the outpatient and inpatient departments in the primary care hospital, directing the medical activities, and conducting medical and paraedical training. In addition, I was supervising satellite health centers under the hospital cluster. I have also served as the surveillance and public health emergency response focal person and vaccination campaign microplanning team leader.

PROFESSIONAL CONSULTANCIES

01/11/2024 – 31/12/2024

Psychoactive substance use and mental health impact national survey data analysis in R - Siera Leone 2024

I was a consultant for the national survey of psychoactive substance use and the MH Impact survey. My responsibilities were to analyse the survey data and deliver a complete report and a PowerPoint presentation to the donors and the the MoH Siera Leone.

01/10/2022 – 11/02/2023

Ebola outbreak data analyiss in R - Uganda 2022

I was an external consultant for the daily Ebola data analysis in R and drawing the daily recommendations for action based on the data output. I have worked on creating automated reporting dashboards. I have also worked on data analytics in R capacity building for the team in the post-outbreak period to build the skills for any next outbreak.

01/04/2022 – 01/10/2022

Monitoring and evaluation tool development for environmentally sustainable and climate resilient health systems - Chad 2022

The main responsibilities were to develop monitoring and evaluation tools for primary healthcare facilities to assess and support environmentally sustainable and climate-resilient health systems in Chad. The deliverables were used for indicator selection for M & E and to identify areas where support was needed.

LANGUAGE SKILLS

Mother tongue(s):   **TIGRIGNA** | **AMHARIC**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
FRENCH	B1	B1	B1	B1	B1
ARABIC	B1	B1	B1	B1	B1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

Tesfay BE, Gobezie D, Sinaga IA, Jacob A, Mullahzada AW, Hussain S, et al. (2024) Lot quality assurance sampling survey for water, sanitation and hygiene monitoring and evidence-based advocacy in Bentiu IDP camp, South Sudan. PLoS ONE 19(7): e0302712. https://doi.org/10.1371/journal.pone.0302712

Van Boetzelaer E, Chowdhury S, Etsay B, Faruque A, Lenglet A, Kuehne A, et al. (2020) Evaluation of community based surveillance in the Rohingya refugee camps in Cox's Bazar, Bangladesh, 2019. PLoS ONE 15(12): e0244214. https://doi.org/10.1371/journal.pone.0244214 pmid:33362236

Degefa Hidru H, Dingeta T, Menigiste B, Etsay B, Gebremedhin H, Berwo M, Asefa GG. Modern Contraceptive Utilization and Its Associated Factors among Indigenous and Nonindigenous Married Women of Reproductive Age Group in Jigjiga Town, Eastern Ethiopia, 2018. Biomed Res Int. 2020 May 24;2020:6878075. doi: 10.1155/2020/6878075. PMID: 32596352; PMCID: PMC7273474.

Gebremeskel MG, Mulugeta A, Bekele A, Lemma L, Gebremichael M, Gebremedhin H, et al. (2020) Individual and community level factors associated with anemia among children 6—59 months of age in Ethiopia: A further analysis of 2016 Ethiopia demographic and health survey. PLoS ONE 15(11): e0241720. https://doi.org/10.1371/journal.pone.0241720

Tremblay, L., Wardley, T., Tesfay, B., Galban-Horcajo, F., West, K., Parry, L., Bestman, A., Adebabai, T., Carrion-Martin, I., Tanaka, M. and Rao, B., (2023) Malaria Anticipation Project: A predictive malaria early warning system to aid operational planning in Jonglei State, South Sudan. In: Malaria Anticipation Project: A predictive malaria early warning system to aid operational planning in Jonglei State, South Sudan. [online] MSF Scientific Day International 2023. MSF-USA.

Alatab, S. et al. (2020) 'The global, regional, and national burden of inflammatory bowel disease in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet gastroenterology & hepatology, 5(1), pp. 17–30.

Yadgir, S. et al. (2020) 'Global, Regional, and National Burden of Calcific Aortic Valve and Degenerative Mitral Valve Diseases, 1990–2017', Circulation, 141(21), pp. 1670–1680. doi: 10.1161/CIRCULATIONAHA.119.043391.

Franklin, R. C., Peden, Amy E., et al. (2020) 'The burden of unintentional drowning: global, regional and national estimates of mortality from the Global Burden of Disease 2017 Study.', Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention, 26(Supp 1), pp. i83–i95. doi: 10.1136/injuryprev-2019-043484.

Dirac, M. A., Safiri, S., Tsoi, D., Adedoyin, R. A., Afshin, A., Akhlaghi, N., et al. (2020) 'The global, regional, and national burden of gastro-oesophageal reflux disease in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet Gastroenterology & Hepatology, 5(6), pp. 561–581.

Crowe, C. S. et al. (2020) 'Global trends of hand and wrist trauma: a systematic analysis of fracture and digit amputation using the Global Burden of Disease 2017 Study.', Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention, 26(Supp 1), pp. i115–i124. doi: 10.1136/injuryprev-2019-043495.

Bikbov, B. et al. (2020) 'Global, regional, and national burden of chronic kidney disease, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet, 395(10225), pp. 709–733. doi: 10.1016/S0140-6736(20)30045-3.

Deshpande, A. et al. (2020) 'Mapping geographical inequalities in access to drinking water and sanitation facilities in low-income and middle-income countries, 2000–17', The Lancet Global Health, 8(9), pp. e1162–e1185. doi: 10.1016/S2214-109X(20)30278-3.

Reiner, R. C., Jr et al. (2020) 'Mapping geographical inequalities in childhood diarrhoeal morbidity and mortality in low-income and middle-income countries, 2000–17: analysis for the Global Burden of Disease Study 2017', The Lancet, 395(10239), pp. 1779–1801. doi: 10.1016/S0140-6736(20)30114-8.

Wiens, K. E. et al. (2020) 'Mapping geographical inequalities in oral rehydration therapy coverage in low-income and middle-income countries, 2000–17', The Lancet Global Health, 8(8), pp. e1038–e1060. doi: 10.1016/S2214-109X(20)30230-8.

Kamangar, F. et al. (2020) 'The global, regional, and national burden of oesophageal cancer and its attributable risk factors in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet Gastroenterology & Hepatology, 5(6), pp. 582–597. doi: 10.1016/S2468-1253(20)30007-8.

Sepanlou, S. G. et al. (2020) 'The global, regional, and national burden of cirrhosis by cause in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet gastroenterology & hepatology, 5(3), pp. 245–266.

Safiri, S. et al. (2019) 'The global, regional, and national burden of colorectal cancer and its attributable risk factors in 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet Gastroenterology & Hepatology, 4(12), pp. 913–933.

Etemadi, A. et al. (2020) 'The global, regional, and national burden of stomach cancer in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease study 2017', The Lancet gastroenterology & hepatology, 5(1), pp. 42–54.

Fitzmaurice, C. et al. (2019) 'Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life-Years for 29 Cancer Groups, 1990 to 2017: A Systematic Analysis for the Global Burden of Disease Study.', JAMA oncology, 5(12), pp. 1749–1768. doi: 10.1001/jamaoncol.2019.2996.

James, S. L. et al. (2020) 'Global injury morbidity and mortality from 1990 to 2017: results from the Global Burden of Disease Study 2017.', Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention, 26(Supp 1), pp. i96–i114. doi: 10.1136/injuryprev-2019-043494.

Sbarra, A. N. et al. (2021) 'Mapping routine measles vaccination in low- and middle-income countries', Nature, 589(7842), pp. 415–419. doi: 10.1038/s41586-020-03043-4.

Cromwell, E. A. et al. (2020) 'The global distribution of lymphatic filariasis, 2000–18: a geospatial analysis', The Lancet Global Health, 8(9), pp. e1186–e1194. doi: 10.1016/S2214-109X(20)30286-2.

Soriano, J. B. et al. (2020) 'Prevalence and attributable health burden of chronic respiratory diseases, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017', The Lancet Respiratory Medicine, 8(6), pp. 585–596. doi: 10.1016/S2213-2600(20)30105-3.

RECOMMENDATIONS

Prof Adam Roberts Professor of Microbiology, AMR research group leader

He was my primary supervisor during my MRes AMR research at LSTM

Email adam.roberts@lstmed.ac.uk

Dr Sabrina Moyo Second supervisor during my MRes study

She was my second supervisor during my MRes AMR research at LSTM

Email sabrina.moyo@lstmed.ac.uk