MANUELA RUNGE, PhD

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Infectious disease epidemiologist with +5 years of experience in mathematical modeling of health interventions with focus on malaria in Africa. Passionate about using analytical tools to improve population health. International experience working in Germany, Switzerland, Tanzania, and the United States. Currently based in Winterthur, Switzerland, and looking for new collaborations in epidemiology and health-related research and programmatic support.

EDUCATION

09/2016 – 10/2019 **Ph.D. Epidemiology – magna cum laude (very good)**
Swiss Tropical and Public Health Institute, University of Basel, Switzerland
Thesis: "Mathematical modeling of malaria control interventions to support strategic planning in Tanzania"
Analysis conducted in: R

08/2014 – 02/2016 **M.Sc. Epidemiology – 5.5 (very good)**
Swiss Tropical and Public Health Institute, University of Basel, Switzerland
Thesis: "The Use of Public Primary Schools for Malaria Surveillance in Tanzania"
Analysis conducted in: STATA

03/2011 – 02/2014 **B.Sc. Health Sciences – 1.3 (very good)**
University of Applied Sciences Hamburg, Hamburg, Germany
Thesis: "The influence of the menopausal hormone therapy on the overall mortality – survival analysis of the control group of the MARIE study"
Analysis conducted in: SPSS

EXPERIENCE

02/2022 – today **Founder and CEO – Manuela Runge GmbH/LLC**
- Through the company, I provide contract work for program-oriented research activities in the field of infectious disease epidemiology, with primary focus on applied mathematical modeling and strategic planning of malaria interventions in Sub-Saharan Africa.

01/2022 – today **External Contractor – Northwestern University**
- Lead modeller on simulating the impact of intermittent preventive therapy in infants and the malaria vaccine RTS,S in collaboration with NGO's explorting implementaion in Southern Nigeria.
- Lead of collaborative project on enabling to run two state-of-the-art malaria agent based models of two independent groups within one framework.
- Enhanced analysis and deliverables in joint projects on malaria modeling with co-workers and collaborators.
- Support of generating training material for African Postdoctoral Students to learn mathematical modeling using EMOD.

01/2020 – 12/2021 **Postdoctoral Researcher – Northwestern University**
- Lead modeller on simulating the impact of intermittent preventive therapy in infants in collaboration with NGO's explorting implementaion of IPTi in Southern Nigeria.

- Led scientific projects on COVID-19 burden forecasting and malaria intervention impact modeling in Illinois.
- Enhanced analysis and deliverables in joint projects on malaria modeling with co-workers and collaborators.
- Trained students and co-workers in python and use of high-performance computing.

09/2016 – 10/2019 **PhD Student – Swiss Tropical Public Health Institute**

- Application of modelling for strategic planning by using country data for district-specific impact predictions of malaria control interventions. Model outcomes informed the National Malaria Supplementary Strategic Plan 2018-2020. The work led to 3 scientific publications and multiple conference presentations.
- Participated in several stakeholder meetings for the revision of the national malaria control strategy 2015-2020, in Dar es Salaam, Morogoro and Bagamoyo.
- Guest researcher in Ifakara to learn more about vector bionomics, in particular about vector breeding sites and larviciding deployment as well as exploring elimination of malaria vectors and larviciding strategies using modeling.
- Acquired general skills in report writing, preparation of meeting and training material and presentation to different audiences.

03/2016 – 08/2016 **Scientific Assistant – Swiss Tropical Public Health Institute**

- Communicated analysis demands, progress, and key findings to National Malaria Control Program and the NETCELL project team based in Dar es Salaam, Tanzania.
- Delivered modeling analysis outputs and reports to key stakeholder meetings, often with tight deadlines.
- Contributed to the development of the malaria risk stratification at district level in Tanzania.

03/2015 – 08/2015 **Student Intern – Ministry of Health and Social Welfare Tanzania, National Malaria Control Programme**

- Supervised data collection and data entry.
- Led data cleaning and data analysis, leading towards a scientific publication.
- Generated a new epidemiological malaria map using malaria prevalence in school children, used to inform malaria risk stratification.

03/2014 – 07/2016 **Medical Data Manager – University Medical Center Hamburg-Eppendorf, Department of Medical Biometry and Epidemiology**

- Supported statisticians in their statistical guidance of clinical researchers and doctoral students.
- Generated automated data description and analysis reports shared with clients.

03/2014 – 06/2014 **Assistant Lecturer** – **University of Applied Sciences Hamburg, Germany**

- Prepared and gave lectures and supervised student group work in the seminar: “Surveillance and Health Reporting”

06/2013 – 09/2013 **Student Intern – University Cancer Center, University Medical Center Hamburg-Eppendorf, Germany**

- Plausibility checks, data cleaning, merging of datasets, and survival analysis.

08/2010 – 02/2011 **Volunteer (Nurse Assistant) – Marienhospital Stuttgart, Department of Internal Medicine and Pneumology, Germany**

VOLUNTEERING

2021 - today **Committee and board member of Applied Malaria Modeling Network (AMMnet)**

- AMMnet is a global community of malaria modelers, data analysts, and partners working together to support malaria decision-making.
- Lead of the 'values and guidance' committee to collate and prepare documents and best practices guidelines.

04/2018 – 05/2020 **Correspondent – Malaria Eradiation Alliance (MESA) and MalariaWorld**

- Generated daily reports of scientific talks at 3 international conferences, held virtually and in person.

01/2017 – 03/2018 **PhD student representative**

- Directed various requests and inquiries between faculty and Ph.D. students.

SKILLS

Hard skills: Microsoft Office: Word, Excel, PowerPoint
Statistical programming: Python, R, Stata, SPSS
Other: QGIS, EpiInfo, LaTeX, High-performance computing

Soft skills: Strong interpersonal skills with a focus on team success
Excellent solution-oriented and problem-solving skills
Advanced organized work style
Strong presentation and writing skills
Extensive experience working in international teams

Languages: English (fluent)
German (native speaker)
Swahili (basics)
(French (learning))

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PUBLICATIONS

Runge, M., Richardson, R.A.K., Clay, P.A., Bell, A., Holden, T.M., Singam, M., Tsuboyama, N., Arevalo, P., Fornoff, J., Patrick, S., Ezike, N.O., Gerardin, J., 2022. Modeling robust COVID-19 intensive care unit occupancy thresholds for imposing mitigation to prevent exceeding capacities. PLOS Global Public Health 2, e0000308.

Runge M, Thawer SG, Molteni F, Chacky F, Mkude S, Mandike R, et al. Sub-national tailoring of malaria interventions in Mainland Tanzania: simulation of the impact of strata-specific intervention combinations using modelling. Malar J. 2022;21: 9.

Runge, M., Mapua, S., Nambunga, I., Smith, T.A., Chitnis, N., Okumu, F., Pothin, E., 2021. Evaluation of different deployment strategies for larviciding to control malaria: a simulation study. Malaria Journal 20, 324.

Ozodiegwu, I.D., Ambrose, M., Battle, K.E., Bever, C., Diallo, O., Galatas, B., **Runge, M.**, Gerardin, J., 2021. Beyond national indicators: adapting the Demographic and Health Surveys' sampling strategies and questions to better inform subnational malaria intervention policy. Malaria Journal 20, 122.

Holden, T.M., Richardson, R.A.K., Arevalo, P., Duffus, W.A., **Runge, M.**, Whitney, E., Wise, L., Ezike, N.O., Patrick, S., Cobey, S., Gerardin, J., 2021. Geographic and demographic heterogeneity of SARS-CoV-2 diagnostic testing in Illinois, USA, March to December 2020. BMC Public Health 21, 1105.

Armstrong, E., **Runge, M.**, Gerardin, J., 2021. Identifying the measurements required to estimate rates of COVID-19 transmission, infection, and detection, using variational data assimilation. Infectious Disease Modelling 6, 133–147.

Runge, M., Molteni, F., Mandike, R., Snow, R.W., Lengeler, C., Mohamed, A., Pothin, E., 2020a. Applied mathematical modelling to inform national malaria policies, strategies and operations in Tanzania. Malaria Journal 19, 101.

Runge, M., Snow, R.W., Molteni, F., Thawer, S., Mohamed, A., Mandike, R., Giorgi, E., Macharia, P.M., Smith, T.A., Lengeler, C., Pothin, E., 2020b. Simulating the council-specific impact of anti-malaria interventions: A tool to support malaria strategic planning in Tanzania. PLoS ONE 15, e0228469.

Thawer, S.G., Chacky, F., **Runge, M.**, Reaves, E., Mandike, R., Lazaro, S., Mkude, S., Rumisha, S.F., Kumalija, C., Lengeler, C., Mohamed, A., Pothin, E., Snow, R.W., Molteni, F., 2020. Sub-national stratification of malaria risk in mainland Tanzania: a simplified assembly of survey and routine data. Malaria Journal 19, 177.

Brunner, N.C., Chacky, F., Mandike, R., Mohamed, A., **Runge, M.,** Thawer, S.G., Ross, A., Vounatsou, P., Lengeler, C., Molteni, F., Hetzel, M., 2019. Evaluating the potential of pregnant women as a sentinel population for malaria surveillance.

Chacky, F., **Runge, M.**, Rumisha, S.F., Machafuko, P., Chaki, P., Massaga, J.J., Mohamed, A., Pothin, E., Molteni, F., Snow, R.W., Lengeler, C., Mandike, R., 2018. Nationwide school malaria parasitaemia survey in public primary schools, the United Republic of Tanzania. Malaria Journal 17, 452.

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CONFERENCE PRESENTATIONS

2021 "Predicting the epidemiological impact of large-scale implementation of intermittent preventive treatment in infants (IPTi) in Southern Nigeria". American Society of Tropical Medicine 70th annual meeting (poster presentation)

"Predicting intensive care unit occupancy and thresholds for action to avoid exceeding capacities in Chicago, Illinois". NSF Student Conference.

2020 "Estimating the potential effectiveness of wide-scale implementation of intermittent preventive therapy in infants in Southern Nigeria". American Society of Tropical Medicine 69th annual meeting (poster presentation)

2019 "Modelling the role of *An. funestus* in a setting where insecticide-treated nets are already widely used but malaria transmission persists". American Society of Tropical Medicine 68th annual meeting (poster presentation)

2018 "Modelling the impact of different larviciding deployment regimens to inform strategic planning". American Society of Tropical Medicine 67th annual meeting (poster presentation)

2017 "Varying impact of malaria interventions at district level – implications of a mathematical model for strategic planning". American Society of Tropical Medicine 66th annual meeting (oral presentation)

2017 "A nationwide school malaria parasitaemia survey (SMPS) in Tanzania". European Conference for Tropical Medicine and Health (poster presentation).