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Non-tuberculosis (TB) bacteria in patients with TB in Kampala, Uganda

Submission date 01/10/2021	**Recruitment status** No longer recruiting	[ ] Prospectively registered [ ] Protocol
Registration date 17/03/2022	**Overall study status** Ongoing	[ ] Statistical analysis plan [ ] Results
Last Edited 17/03/2022	**Condition category** Other	[ ] Individual participant data [ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The microbiota are complex communities of microbes that reside in mammals and play a significant role in health and disease including induction/function of the immune system. However, baseline information on their composition and potential role(s) in pulmonary tuberculosis (TB) in sub-Saharan Africa, is lacking.
TB is a bacterial infection spread through inhaling tiny droplets from the coughs or sneezes of an infected person. It mainly affects the lungs, but it can affect any part of the body, including the tummy (abdomen), glands, bones and nervous system.
The overall purpose of this proposal is to determine the composition of the microbiota in pulmonary TB in Kampala, Uganda, and examine its relationship with treatment- and immune-response in TB patients relative to their household healthy contacts without TB-infection and HIV-infection.

Who can participate?
Adults (18 years or older) newly diagnosed with TB

What does the study involve?
Participants will provide blood, stool, and sputum samples a number of times over a 2 year period.

What are the possible benefits and risks of participating?
Apart from the contribution of knowledge generation that could advance tuberculosis research in Africa, there are no direct benefits in participating in the study. There are very minimal risks of participating as we will use clinical specimens that are routinely collected during patient investigation. As we will collect a small amount of blood (i.e., 5 ml) from the participants, they may experience some pain in the course of phlebotomy.

Where is the study run from?
Makerere University College of Health Sciences (Uganda)

When is the study starting and how long is it expected to run for?
January 2019 to December 2026

Who is funding the study?
European and Developing Countries Clinical Trials Partnership (TMA2018CDF-2357)

Who is the main contact?
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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)

Nil known

Protocol serial number
Nil known

Study information

Scientific Title
Insight into the role of the microbiome in pulmonary tuberculosis in Kampala, Uganda

Acronym
MTI-Plus

Study objectives
The microbiota/microbiome, complex communities of microbes in mammals, play a significant role in health and disease including induction/function of the immune system. However, baseline information on their composition and potential role(s) in pulmonary tuberculosis (TB) in sub-Saharan Africa, is lacking. The overall purpose of this proposal is to determine the microbiome composition in pulmonary TB in Kampala, Uganda, and examine its relationship with treatment- and immune-response in TB patients relative to their household healthy contacts without TB-infection and HIV-infection.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 24/06/2020, Makerere University School of Biomedical Sciences Research Ethics Committee (SBS-REC, P.O. Box 7072 Kampala, Uganda; +256-414-532-204; biomedicalresearch62@gmail.com), ref: SBS-REC 780

Study design
Longitudinal observational

Primary study design
Observational

Study type(s)
Other

Health condition(s) or problem(s) studied
Investigation of the microbiome of patients with tuberculosis

Interventions
In the proposed project, we will investigate sputum, stool and blood samples from a total of 800 participants at baseline (day 0 before administering therapy), as well as months 2, 5, 12, 18 and 24 for microbial and cytokine profiles. Note, of the 800 participants, 500 will be pulmonary TB cases of whom 300 are expected to be HIV-positive (TB+/HIV+) while 200 will be HIV-negative (TB+/HIV-) given the HIV/TB co-infection rate of 40% in Uganda. We will investigate baseline samples (sputum, stool & blood) from 300 household contacts (i.e. the comparator group) of the 500 TB patients: Household contacts will be adults and healthy (i.e. HIV negative & TB negative

with no signs of disease symptoms) family members of the 500 TB cases matched for age and gender. We will avail human microbiota profiles of patients from a TB endemic setting with high rate of HIV/TB coinfection, whose profiles could be used as a reference for similar settings in Africa. Overall, we will investigate sputum, stool and blood samples from each of the 800 participants (500 TB cases and 300 healthy controls i.e. household contacts), as outlined above. Each household will be visited by a study nurse who will identify the healthy contacts (aged 18 years and older). In each household, consented contacts will be screened for TB and HIV, and interviewed for information on demographic characteristics, history of illnesses and antibiotic treatment. Contacts found to have HIV and/or TB will not be recruited but the results will be provided to them via a counsellor at the TB clinic. Note that samples from each household contacts (n=300) will be collected as described for the TB cases (i.e. by an expert pulmonologist and/or study nurse) but only once at baseline. In other words, we will not follow-up healthy contacts since they won't be on treatment for TB. On the other hand, more samples (sputum, stool and blood) will be collected from pulmonary TB patients (n=500) at months 2, 5, 12, 18 and 24. To obtain stool, participants will be provided with sterile containers for collecting samples before they take anti-TB drugs, and instructed to return samples to the TB clinic the following day. To prevent growth of bacteria, 2-β-mercaptoethanol (2%) will be added to the samples immediately after collection and transported in a cool-box to the Molecular Laboratory for DNA /RNA purification; the extracted DNA/RNA will be stored at -80°C in the biorepository. As well, 50 ml of blood will be drawn from each TB participant and immediately taken to the laboratory for preparation of serum/plasma and isolation of peripheral blood mononuclear cells (PBMCs). Samples (sputum, stool and blood) from each participant will be processed as below; please note that for healthy controls, samples will be taken only at baseline while for TB cases, samples will be collected at baseline (before treatment initiation) and during follow-up (months 2, 5, 12, 18 and 24). Following processing, we will store the remaining samples (serum/plasma, blood, stool and sputum) at the H3Africa Biorepository for a period of 5 years.

Intervention Type
Other

Primary outcome(s)
Microbiome composition and diversity measured from stool sample using the alpha and beta diversity indices in the 'R' statistical package at baseline (time 0) and at 2, 5, 12, 18, and 24 months

Key secondary outcome(s))
Cytokine profiles relative to the microbiome composition and diversity measured using serum /plasma, blood, stool and sputum samples using the ELISA assay at baseline (time 0)

Completion date
01/12/2026

Eligibility

Key inclusion criteria
New adult TB patients 18 years and older

Participant type(s)
Patient

Healthy volunteers allowed

No

Age group
Adult

Lower age limit
18 years

Sex
All

Key exclusion criteria
1. Previously treated TB patients
2. Children

Date of first enrolment
01/10/2021

Date of final enrolment
31/10/2024

Locations

Countries of recruitment
Uganda

Study participating centre
Makerere University College of Health Sciences
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Sponsor information

Organisation
Makerere University

ROR
https://ror.org/03dmz0111

Funder(s)

Funder type
Government

Funder Name
European and Developing Countries Clinical Trials Partnership

Alternative Name(s)
Le partenariat Europe-Pays en développement pour les essais cliniques, A Parceria entre a Europa e os Países em Desenvolvimento para a Realização de Ensaios Clínicos, The European & Developing Countries Clinical Trials Partnership, European and Developing Countries Clinical Trials, EDCTP

Funding Body Type
Private sector organisation

Funding Body Subtype
International organizations

Location
Netherlands

Results and Publications

Individual participant data (IPD) sharing plan
All data generated or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary
Published as a supplement to the results publication

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes