



# Increasing bacterial resistance against antibiotics in Africa

A global problem of unknown dimensions



## Partnership between

Düsseldorf University Hospital,  
Clinic of Gastroenterology Hepatology  
and Infectious Diseases /  
GERMANY

and

Arsi University Asella Teaching  
and Referral Hospital /  
ETHIOPIA





# CREATING CHANGE IN HEALTHCARE

## ETHIOPIA

Ethiopia is the oldest independent and the second-most populous country in Africa with a population of 114.7 million inhabitants. It is the most populous landlocked country in the world. Apart from a five-year occupation by Mussolini's Italy, it has never been colonised.

In 2018, Prime Minister Abiy Ahmed launched a campaign of political liberalisation at home and sought to end disputes with Ethiopia's neighbors, in particular Eritrea. Parliament elected Sahle-Work Zewde as the Ethiopia's first woman president in October 2018.

Life expectancy at birth in Ethiopia is 63 (m) / 67 (f) years.

The probability of dying under the age of five is 55.2 for 1,000 live births.

The programme "University and Hospital Partnerships in Africa" supports partnerships between hospitals and universities in Germany and in African countries in Sub-Saharan Africa.

The main effort is focused on capacity strengthening, experience sharing and knowledge exchange through professional dialogue, repeated visits and training.

The difference and advantage compared with other international cooperation initiatives is the collaboration with medical professionals in partner countries which builds a high degree of trust and acceptance. The problem is jointly identified, and the activities collectively developed and always in line with national strategies.

In addition to the medical professionals, IT experts are also involved in the partnerships to discuss and find IT solutions to improve medical care.

# ANTIBIOTIC RESISTANCE IN ETHIOPIA



Bacteria and other germs change when they are exposed to anti-microbial treatments like antibiotics. This results in resistance against the substances used and medications lose their effect.

Antimicrobial resistance (AMR) can render it impossible to treat common infections and leads to substantially increased costs of healthcare, prolonged treatment, disability and death.

AMR is a global problem and thus needs to be tackled globally. It exists in every country.

Main causes of this development are the overuse of antimicrobial medicine – especially in agriculture and animal farming – and unnecessary prescriptions for patients. Inappropriate use, wrong dosage, and lack of knowledge by medical doctors and patients alike aggravate the problem. The extent of AMR in low- and middle-income countries (LMIC) is largely unknown, mainly because respective data is missing.

Like all countries, Ethiopia is facing the continuous development of antibiotic resistance against the antibiotics available caused by the inappropriate handling of antibiotic medicine. However, like in many LMIC, *the extent of the problem is unknown because respective data is not available.*

Because of limited microbiological infrastructure in most places, the causative bacteria are not known. Neither is the medicine that is still effective. Only this information allows medical professionals to choose the right antibiotic and the government to develop national treatment guidelines.

The Ethiopian government has recognised the need for improving this situation.

Based on this national as well as existing international commitment, the two partnering universities have decided to tackle this important public health problem and join the global efforts to stop further resistance development.

Joint efforts include the establishment of a data collection system, a so-called surveillance system, the training of laboratory personnel to identify bacteria causing clinically relevant infections and possible resistance against the available antibiotics, training of medical doctors to handle antibiotic treatment responsibly and based on the information available, and support of the Ethiopian government to develop standard treatment guidelines based on the data collected.

## Our eHealth Contribution

One important problem identified is the communication between medical doctors caring for patients and the respective laboratories performing necessary analyses. Specimen and requests for testing are paper-based and frequently go lost on the way between these two entities or reach the laboratories after a long delay. The same applies to test results: These often reach the doctor too late or never which makes it impossible to base clinical decisions on them.

Therefore, the partnership decided to use an innovative approach and develop together with IT specialists an app-based communication system between the laboratory and medical doctors. This will ensure timely delivery of the request and test result as well as the collection of valid data for subsequent analyses and the development of local evidence-based guidelines.

All tools developed consist of free and open-source software which has been adapted in teamwork with neighbouring African regions: six partnerships collaborate closely because they use the same approach. This collaboration is called the COMBAT AMR network.

The COMBAT AMR network allows comparing/sharing of as well as joint discussions on data, the exchange of experiences, discussions on possible solutions, regional recommendations, and it creates substantial synergies.

## Düsseldorf University Hospital, Clinic of Gastroenterology Hepatology and Infectious Diseases / GERMANY

The Department of Gastroenterology, Hepatology and Infectious Diseases is one of the leading institutions for infectious diseases and tropical medicine in Germany. The newly built Liver and Infectious Diseases Center includes specialised ambulances and wards covering the whole spectrum of infectious and tropical diseases including vaccination and travel advisory service, therapy of hepatitis and HIV, diagnostics and therapy of tropical diseases as well as treatment of highly contagious and pathogenic diseases.

## The Hirsch Institute for Tropical Medicine in Asella / ETHIOPIA

The Clinic of Gastroenterology, Hepatology and Infectious Diseases has founded the Hirsch Institute for Tropical Medicine in Asella in 2013 with the objectives of knowledge transfer and creating a research platform for studies on infectious diseases and tropical medicine in tight partnership with Arsi University. Joint research and teaching activities comprise projects on locally relevant topics as Mother and Child Health, hospital hygiene, infection prevention, patient safety and, with increasing relevance, AMR.

## Arsi University Asella Teaching and referral hospital / ETHIOPIA

The Asella Teaching and Referral Hospital was founded in 1964 and is now part of the newly founded Arsi University and its College of Health Sciences. As a tertiary hospital, it serves as a referral hospital for the Arsi Zone, providing health care for its more than 3.5 million inhabitants.



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<https://www.giz.de/en/worldwide/84939.html>

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