Increasing bacterial resistance against antibiotics

A global problem of unknown dimensions

Partnership between

LMU University Hospital Munich,
Division of Infectious Diseases
and Tropical Medicine /
GERMANY

and

Jimma University Medical Centre /
ETHIOPIA

UNIVERSITY &
HOSPITAL PARTNERSHIPS
IN AFRICA

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.

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 Ethiopia's first female president in October 2018.

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

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

CREATING CHANGE

IN HEALTHCARE

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 antimicrobial 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 medium-income countries (LMIC) is largely unknown, mainly because respective data is missing.

Like all countries worldwide, Ethiopia is facing the continuous development of AMR caused by inappropriate handling of antibiotic medicines. However, like in most other LMIC, *the extent of this problem is unknown and respective data is not available.* Due to scarcity of data, causative bacteria of common infections and their antibiotic susceptibility pattern in the region remain unknown.

Only this information allows medical professionals to choose the right antibiotic and the government to develop national treatment guidelines.

The Ethiopian government has recognised this need and supports these two partnered universities in tackling this important public health problem as well as in joining global efforts to slow further development of AMR.

Joint efforts include the establishment of a digital data collection tool, a so-called surveillance system, the training of laboratory personnel to identify bacteria causing infections, analysis of local resistance patterns against available antibiotics, support for medical doctors by providing a digital decision support tool, and help for the Ethiopian government to develop national treatment guidelines based on these national data among others.

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 too late. 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.

LMU University Hospital Munich / GERMANY

LMU University Hospital Munich is a centre of high-end medicine, medical innovation and research. With its two campuses in Grosshadern and in the city centre, it is one of the largest hospitals in Germany and Europe. Every year, around 500,000 patients are treated in 29 specialist clinics, twelve institutes from seven departments, and 50 interdisciplinary centres throughout Munich. The Institute of Infectious Diseases and Tropical Medicine with its International Clinical Trial Unit (iCTU) has been involved in clinical, epidemiological and biomedical research mainly in African countries for more than 25 years with a focus on HIV, tuberculosis and tropical diseases.

Jimma University Medical Centre / ETHIOPIA

Jimma University Medical Centre (JUMC) is one of the oldest public hospitals in the country with a bed capacity of 800. Geographically, it is located in the city of Jimma, 352 km southwest of Addis Ababa. Currently it is the only teaching and referral hospital in the southwestern part of the country, providing services for approximately 16,000 inpatient, 220,000 outpatient attendants, 12,000 emergency cases and 4,500 deliveries in a year coming to the hospital from the catchment population of about 15 million people.

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