Increasing bacterial resistance against antibiotics

A global problem of unknown dimensions

Partnership between

Charité Universitätsmedizin Berlin, Institute of Tropical Medicine and International Health / GERMANY

and

International Health and University Teaching Hospital of Butare / RWANDA





RWANDA

Rwanda is a small land-locked country in east-central Africa with a population of 11.9 million living on an area of 26,338 km².

Rwanda makes strong efforts to strengthen its economy, with coffee and tea production among its main exports.

The World Bank has praised Rwanda's "remarkable development successes", which have helped reduce poverty and inequality.

Life expectancy at birth in Rwanda is 66 (m) / 70 (f) years.

The probability of dying under the age of five (per 1,000 live births) is at 35.

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 RWANDA



Bacteria and other germs change when they are exposed to antimicrobial treatments like antibiotics. This can result in resistance against the substances used and the effect of medications can be impaired. 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, lack of knowledge by medical doctors and patients alike are barriers of appropriate use. The extent of AMR in low- and middle-income countries (LMIC) is largely unknown, mainly because respective data is missing.

Like all countries, Rwanda is facing the continuous development of antibiotic resistance caused mainly by inappropriate handling of antibiotic medicine. However, like in many LMICs, the extent of the problem is unknown because respective data is scarce. Against this backdrop, more information is needed about the regional and local pathogen and resistance situation. This information allows medical professionals to choose the right antibiotic and the government to develop and adapt local, national and regional treatment guidelines.

The government of Rwanda has recognsed 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 systematic data collection and registration system, a so-called surveillance system, the training of laboratory personnel to identify bacteria causing an infection and possible resistance against the available antibiotics, training of medical doctors to handle antibiotic treatment with care and based on the information available, and support of the government of Rwanda 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 mainly 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 difficult 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.

Charité Universitätsmedizin Berlin / GERMANY

Charité Universitätsmedizin Berlin, a corporation under public law and a legal entity, is one of the largest university hospitals in Europe. It represents the medical faculty of both Humboldt University Berlin and Free University Berlin. Clinical care, research and teaching is delivered by physicians and researchers of the highest international standard. Charité proudly lays claim to more than half of all German Nobel Prize winners in Physiology or Medicine, including Emil von Behring, Robert Koch, and Paul Ehrlich. Charité is internationally renowned for its excellence in teaching and training.

International Health and University Teaching Hospital of Butare / RWANDA

CHUB is a 500-bed hospital located in the Southern Province, the city of Huye, one of six secondary cities to the capital of Kigali. It serves a population of more than 3.7 million in the Southern Province and some districts of the Western Province in Rwanda which are about 90% rural. The pathology department (laboratory) of CHUB is the oldest in the country. During the colonial period, it was the only reference laboratory for Rwanda, Urundi (Burundi) and Congo Belge (Democratic Republic of Congo). Back then, it consolidated veterinarian and humanitarian medicine. The pathology department of CHUB is the only one that can perform susceptibility testing in the Southern and Western Provinces. In addition to health care providers of 547 health facilities ranging from referral hospital to health post - more than 70,000 community health workers can prescribe or provide antimicrobial agents.





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