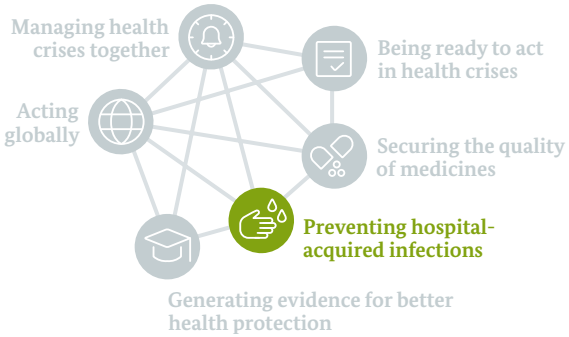

GHP Programme

Development of a Standardised AMR Laboratory for Resource-Limited Settings

Stand-AMR

Duration
2019–2021

Budget/year
approx. 329,000 EUR

Partner countries
Ghana
Mali

Challenges addressed by the project

The spread of antimicrobial resistant (AMR) pathogens will severely affect sub-Saharan Africa in the coming years, with an estimated 4.2 million AMR-associated deaths expected in 2050. While strengthening molecular biology diagnostics plays an important role in preparing for and managing viral epidemics, it will be of limited use during the current AMR epidemic. This is due to molecular methods still being suboptimal and too expensive for routine AMR monitoring and detection of emerging bacterial resistance. Rather, classical bacteriology laboratories capable of carrying out bacterial cultures and antibiotic susceptibility testing are urgently needed outside large teaching and university clinics in semi-urban or rural sub-Saharan Africa.

Objectives

- Development of a universally applicable construction plan for bacteriology laboratories used for the diagnosis of AMR pathogens
- Construction of bacteriology laboratories for AMR in Assin Foso and Agroyesum, Ghana and Koro, Mali
- Training of laboratory staff and evaluation of AMR surveillance activities
- Establishment of biobanks for the safe storage of biological samples and isolates and Laboratory Information and Management Systems (LIMS)

Overview of activities

The project aims at developing the prototype of functional and cost-effective diagnostic bacteriology laboratories capable of processing microbiological samples including blood, urine, stool etc. as well as antibiotic susceptibility tests according to the guidelines of the WHO Global Antimicrobial Resistance Surveillance System (GLASS). The laboratories will be fully integrated into the national AMR surveillance activities and are designed as self-sufficient structures that operate without external power and water supply in difficult-to-access regions. The first prototype laboratory in Assin Fosu was successfully completed in 2020. AMR surveillance activities have now been introduced to the laboratory, and patient samples are currently being processed in the laboratory integrated into the hospital routine. Capacity building of laboratory personnel and training activities is continuously conducted. Training for two technical laboratory assistants as proposed in the previous report was successfully completed at the Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR). The training focussed on the identification and sensitivity testing of bacterial pathogens from different sample types.

Supported by:

Federal Ministry of Health

on the basis of a decision by the German Bundestag

Inspection of the construction site, St. Francis Hospital Assin Foso, Ghana

Completed construction of AMR laboratory at St. Francis Hospital Assin Foso, Ghana

Construction site of AMR laboratory in Agroyesum, Ghana

Fully equipped AMR laboratory at Assin Foso, Ghana

Photos ©Stand-AMR

We have also evaluated ongoing activities and are currently working on the feedback given to us by the local members of staff. This for example has resulted in the introduction of other sample types such as the processing of cerebrospinal fluid and wound samples.

We further conducted a Global Point Prevalence Survey (GPPS) to measure the antibiotic consumption of hospital inpatients. We aim to track changes in the perceptions of hospital personnel that result in more targeted prescription patterns being informed by the results of the antibiotic susceptibility testing.

The second laboratory in Mali has now been fully equipped. Training activities as well as the establishment of AMR surveillance will start within the next months. Also, we are currently working on a Laboratory Information and Management System (LIMS) to be introduced in the local laboratories in Ghana.

A twin laboratory to the laboratory in Assin Fosu is under construction in the rural Agroyesum (see pictures below) and equipment has been purchased by the KCCR and BNITM.

Partner institutions

- Kumasi Centre for Collaborative Research in Tropical Medicines (KCCR), Ghana
- The Ghana Health Service (GHS), Ghana
- Centre d'Infectiologie Charles Mérieux (CICM), Mali
- African Association for Research and Control of Antimicrobial Resistance (AAAMR), Mali
- Bernhard Nocht Institute for Tropical Medicine (BNITM), Hamburg

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