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RHISSA Research Networks for Health Innovations in Sub-Saharan Africa
ANDEMIA

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African Network for improved Diagnostics, Epidemiology and Management of Common Infectious Agents

Short description of the network project:
The African Network for improved Diagnostics, Epidemiology and Management of Common Infectious Agents (ANDEMIA) is dedicated to diagnosing and combating acute infectious diseases of the respiratory and gastrointestinal tracts, acute fevers of unknown origin, and infections with multidrug-resistant bacteria in sub-Saharan Africa (SSA). To this end, research teams from Côte d'Ivoire, Burkina Faso, the Democratic Republic of the Congo and South Africa are cooperating with the Robert Koch Institute in Germany to tackle these challenges. Affected hospital patients in SSA are thus benefiting from better laboratory diagnosis of common diseases, and clinical staff are being trained in preventing pathogen spread at healthcare facilities. Beyond that, the data collected are providing crucial information about the circulation and transmission patterns of pathogens both in SSA and on a global scale. Training programmes directed at junior scientists will ensure the sustainable transfer of skills in the partner countries.

BURKINA FASO
Centre Muraz

CÔTE D'IVOIRE
National Laboratory of Agricultural Development
University Teaching Hospital Bouaké

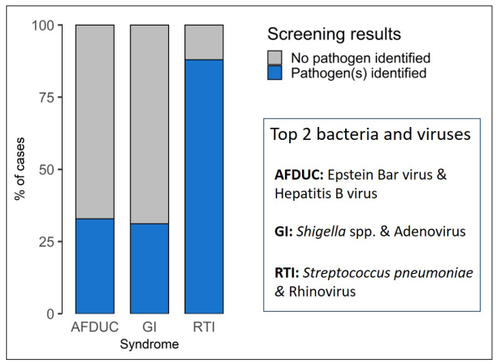
DEMOCRATIC REPUBLIC OF THE CONGO
National Institute for Biomedical Research
University of Kinshasa

SOUTH AFRICA
University of Pretoria
National Institute for Communicable Diseases

GERMANY
Robert Koch-Institut (Berlin)

ANDEMIA network meeting in Bobo-Dioulasso, Burkina Faso (©Andreas Sachse)

Challenge, approach and impact:
Acute respiratory, enteric, and febrile diseases are leading causes of illness and death in SSA, particularly among children. They are so widespread in part because the capacity to diagnose the responsible micro-organisms is often limited and the risk factors are unknown. ANDEMIA has applied classic bacteriology and modern molecular methods targeting a broad spectrum of possible pathogens and investigated potential risk factors of infection, such as age, occupation, and the availability of clean drinking water. ANDEMIA researchers have examined over 20,000 patients and tested 50,000 samples to help clarify the aetiology of disease (pathogens were identified in 88% of respiratory, 31.2% of diarrhoeal, and 32.9% of fever cases). Common respiratory viruses and bacteria were detected, with respiratory syncytial virus (RSV), rhinovirus, coronaviruses, and influenza being the most frequent. Common enteric pathogens detected included Shigella spp., norovirus, and rotavirus, with most of the burden in children under five years of age. We noted (in South Africa, for instance) a shift in the seasonality of respiratory and enteric viruses during the COVID-19 pandemic when lockdowns occurred. For AFDUC cases, common viruses such as Epstein Barr virus (EBV), adenovirus, and enteroviruses were detected year-round. To prevent the spread of disease, training on the prevention and control of infections has been carried out in hospitals and followed up with train-the-trainer courses. The participating research groups have thus far contributed to 41 scientific publications. Furthermore, due to the comprehensive training and education provided to scientific and technical staff, competent personnel will be available to investigate future disease outbreaks and, in the case of COVID-19, have already been involved in the pandemic response.



Results of comprehensive testing for pathogens causing acute respiratory, enteric, and febrile disease by the ANDEMIA network | AFDUC: acute febrile disease of unknown cause; GI: acute gastrointestinal infection; RTI: acute respiratory tract infection
(@ Essia Belarbi, Grit Schubert)

Director (Côte d'Ivoire):
Prof. Dr Chantal Akoua-Koffi | akouamc@yahoo.fr
Co-director(s) (Germany):
Dr Grit Schubert | schubertG@rki.de
previous co-director Prof. Fabian Leendertz | fabian.leendertz@helmholtz-hioh.de
Link to Website:
https://www.andemia.org/