

THE AAS IMPACT

DELTA Africa: African scientists expand test for diagnosing acute rheumatic fever

THRiVE at a glance

The Developing Excellence, Leadership and Training in Science in Africa (DELTA Africa), a programme of The African Academy of Sciences, supports the Training Health Researchers into Vocational Excellence in East Africa (THRiVE), a regional network of research excellence that has forged strong partnerships with universities and research institutes in East Africa. The goal of the network is to enhance the transformation of East African Universities into world-class research hubs by spearheading the transition of PhD and post-doctoral fellows into health research leaders.



2 out of **10** patients die from rheumatic heart disease

70% of cases are estimated to come from sub-Saharan Africa

Background

The worldwide scarcity of medical doctors affects the African continent most where there are only a few specialists. Heart specialists are even fewer with only about 2,000 available to the over 1.2 billion population in Africa, that's 1 heart specialist per 600,000 people. Most of these live and practice in South Africa and the Maghreb countries, leaving an even fewer number for the rest of Africa.

Rheumatic heart disease, a long term consequence of rheumatic fever, affects 39 million people with about 365,000 deaths annually. 70% of these are estimated to come from Africa. In Uganda, about 3 out of 100 children have been documented to have the early form of disease but in the hospitals, most patients with the condition present late with advanced disease that leads to death in 2 out of 10 patients. This is attributed to gaps in early disease diagnosis and weakness in the public health care system that misses the early stages of the disease.

The current Jones criteria for the diagnosis of acute rheumatic fever is based on a set of clinical signs and symptoms supported by laboratory tests that have to be met before someone is diagnosed with rheumatic fever, the condition that leads to rheumatic heart disease. Due to differences in disease presentation, some patients do not fully meet the Jones criteria and are then missed during the early phase of disease, only to present later with advanced disease.

Description of study

THRiVE scientists are studying genetics of patients diagnosed with rheumatic fever to understand how the body responds to infection with Group A streptococcus- the bacteria that triggers rheumatic fever- that eventually leads to rheumatic heart disease. This knowledge will aid in development of treatment modalities that prevent progression of acute rheumatic fever to end stage valve disease.

The team of African scientists based in Uganda have expanded the Jones criteria, an international test for diagnosing acute rheumatic fever, through incorporating additional tests that are locally available. This will be developed into a clinical decision tool, that can be used by health workers to capture and follow up on patents that present with acute rheumatic fever.

Anticipated outcomes

- The tool will enable primary health care workers to diagnose the condition in settings where there are no doctors or heart specialists
- The tool will also improve capture and early diagnosis of acute rheumatic fever. This offers a huge opportunity to intervene with monthly injection of benzathine penicillin, a cheap (<1\$) and widely available treatment.