

# THE AAS IMPACT

## DELTA Africa: Researchers lay the ground work for improved rotavirus vaccines

### IDeAL 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 Initiative to Develop African Research Leaders (IDeAL), a high-quality training programme that aims to develop outstanding young African scientists into world-class research leaders. It is available to young researchers, from undergraduate research attachments to postdoctoral fellowships, with the aim of keeping scientists at African institutions through a defined programme of recruitment, supervision, mentorship, multidisciplinary approaches and clear career paths.



# 330,000

Children died from diarrhoea in 2015 in Africa

### Background

In Africa, diarrhoea is the third leading cause of death among children under the age of five years. In the year 2015 alone, diarrhoea was responsible for up to 330,000 deaths of African children and rotavirus infection estimated to be responsible for about half of them. Fortunately, effective rotavirus vaccines have become available in the last decade, and their increasing use has resulted in the rapid fall of rotavirus disease burden worldwide. However, these vaccines are reportedly having the lowest efficacy and effectiveness in Africa where the disease burden is highest. There is an urgent need to elucidate and remove barriers to realising the full potential of the rotavirus vaccine for African children and that is what IDeAL funded researchers aim to achieve.

In Kenya, about 25% of all hospitalised children under the age of five years have diarrhoea symptoms. Estimations indicate that about 6% of all deaths in Kenyan children result from severe diarrhoea related complications, including dehydration. Rotavirus is a lead cause of life-threatening dehydrating diarrhoea and is estimated to cause about 9,000 child deaths in Kenya each year. In Kilifi County Hospital, IDeAL researchers observed that approximately 60% of children presenting with diarrhoea symptoms have some dehydration or severe dehydration. Introducing the rotavirus vaccine in Kenya reduced the burden by almost half. Researchers seek to discover how to realise the full potential of the rotavirus vaccines in the African continent.

### Description of study

The IDeAL study is among the few African studies describing enteropathogen burden in the post-vaccine era and how this has influence on rotavirus vaccine efficacy. The study in Kenya led by a Mid-career Postdoctoral Researcher provided evidence of high coinfection rates in children seeking medical attention following diarrhoea symptoms, an observation expected to influence the clinician perspective of diarrhoea treatment in the region.

The observation that strains causing severe rotavirus infection in Kenyan children post-vaccine era are mostly newly introduced, offers novel insight on where to intensify control strategies. This highlights the importance of increasing the global rotavirus vaccine coverage otherwise non-vaccinating population/countries will continue to act as viral reservoirs that seed vaccine heterotypic viruses to vaccinating populations.

### Anticipated outcomes

- The effectiveness of rotavirus vaccines in low-income settings is only about 55% compared to >80% in high-income settings. This research will improve understanding on why rotavirus vaccines do not perform very well in low-income settings and quantify the burden and extent of coinfection with other enteric pathogens
- This research will inform an improved vaccine and vaccination strategy against rotavirus and other leading infectious causes of diarrhoea in Africa.