



Group photo of participants during the launch of the program in Kilifi. PHOTO CREDIT: KEMRI

KEMRI Wellcome Trust's programme seeks to fight aflatoxins danger for children

By Murimi Gitari

The Kenya Medical Research Institute (KEMRI)-Wellcome Trust Research Programme and London School of Hygiene and Tropical Medicine have launched an initiative aimed at reducing child mortality by confronting the hidden dangers of aflatoxin contamination in staple foods.

The research initiative dubbed 'Tackling the Risks of Aflatoxins and Climate Effects on Child Health in Africa (TRACE)' will investigate how climate change worsens aflatoxin contamination and its impact on child health in Kenya and The Gambia.

With its multidisciplinary approach blending climate science, epidemiology, immunology, and community research, TRACE aims to reduce child mortality by curbing the effects of aflatoxins on nutrition and vaccine effectiveness, ensuring that children across Africa have a healthier, more resilient start in life.

Aflatoxins, produced by fungi and worsened by climate change, are not only linked to liver cancer but also undermine child nutrition and weaken immune responses to vaccines, leaving millions of children across Africa vulnerable to preventable illness and death.

Speaking during the launch of the programme in Kilifi, Prof Ambrose

Agweyu, a paediatrician and clinical epidemiologist and the lead scientist of the programme, noted that aflatoxin contamination has become a pressing public health issue in Kenya and across Africa, particularly in the context of climate change. Smallholder farmers, he observed, often dry their grain in the sun, leaving it vulnerable to erratic weather patterns that provide ideal conditions for the fungi that produce aflatoxins to thrive.

"Prolonged droughts and heavy rainfall both create conditions that favour the growth of fungi such as *Aspergillus flavus*, which produces aflatoxins. In the past,





Prof. Ambrose Agweyu, a paediatrician and clinical epidemiologist and the lead scientist of the TRACE program. PHOTO CREDIT: KEMRI

← when weather patterns were more predictable, farmers could dry their grain more reliably. Today, however, unpredictable climatic shifts have made complete drying difficult, leading to higher risks of contamination,” he said.

Archived blood samples from long-term studies in Kilifi and in Gambia provide an opportunity to track toxin levels against climate data, generating robust evidence of the link between environmental change and child health. Chronic exposure to aflatoxin not only causes acute poisoning and liver cancer but also undermines nutrition, weakens immunity, and reduces the effectiveness of vaccines.

For Prof Agweyu, the launch of TRACE marked an important first step in building the partnerships needed to protect child health in the face of climate change

“One of the biggest challenges has been the siloed approach of government ministries. The Ministry of Health, the Ministry of Agriculture, and the Ministry of Environment each recognise the problem but often act independently. TRACE seeks to break down these silos by bringing stakeholders together, national and

county governments, researchers, and the media included to align strategies and speak with one voice,” said Prof Agweyu.

He underscored the importance of consistent messaging, noting, “farmers in Kilifi, and other regions rely heavily on clear communication to adopt safer practices.”

Dr Julliet Omwoha, Head of Newborn and Child Health, Ministry of Health in Kenya, noted that for too long aflatoxin has been tackled primarily as a food safety and trade matter - something regulated in the agricultural sector.

“I want to be direct in recognising aflatoxin is a child health emergency, and its effects on our youngest Kenyans begin in the womb. When a pregnant mother consumes contaminated maize aflatoxin crosses the placental barrier and reaches the developing foetus and it does not stop at birth: aflatoxin metabolites are detectable in breast milk, meaning that even a breastfeeding infant whose mother has no other recourse than locally stored grain continues to receive a daily dose of this mycotoxin during the most critical window of immune and neurological development. This is a sobering reality that demands we move our response well upstream of the clinic, upstream

of the health facility, and upstream of the postnatal visit,” said Dr Omwoha.

“Chronic aflatoxin exposure in young children causes stunting. It suppresses the immune system, undermines the very vaccines that our health system delivers with such effort and investment, rendering them less effective in the children who need them most.”

Prof Agweyu highlighted one of the most promising innovations in combating aflatoxin contamination: Aflasafe, a biocontrol product developed through collaborative research in Kenya and beyond. Aflasafe works by introducing a harmless strain of fungus into farmers’ fields. This strain does not produce toxins and effectively outcompetes the dangerous *Aspergillus flavus* fungus that does. By displacing the toxin-producing fungus, Aflasafe protects grain from contamination and reduces aflatoxin levels in both soil and harvests.

While studies have already demonstrated Aflasafe’s effectiveness in lowering contamination, Prof Agweyu noted that the critical gap lies in understanding its direct health impacts. TRACE aims to bridge this gap by investigating whether reduced aflatoxin exposure translates into measurable improvements in child health - such as stronger immunity, fewer respiratory infections, and lower rates of diarrhoea.

He reminded the audience that Kenya has experienced deadly aflatoxicosis outbreaks, particularly in the eastern regions, where contaminated maize has caused acute liver failure and even death. Yet, he cautioned, the true burden of aflatoxin goes far beyond these headline-grabbing crises. Emerging evidence shows that chronic exposure affects children’s immunity, contributes to stillbirths and premature deliveries, and may even impair learning and school performance. Children heavily exposed to aflatoxins risk failing to reach their full academic potential, which in turn undermines their economic prospects and perpetuates a cycle of poverty across generations.