WASH and Vaccines: A Comprehensive Evaluation of Diarrhoea Among Rotavirus Immunized Child Populations in Zambia

Understanding the role of pathogens on oral vaccine failure

1. The situation

Rotavirus is a leading cause of diarrhoea, and diarrhoea is the second leading cause of death in children worldwide. **Rotavirus vaccines** that have been integrated into routine immunization schedules in high-burden countries **have had relatively poor performance.**

2. The context

CIDRZ is situated at the forefront of diarrhoeal surveillance research in Zambia, and will be conducting laboratory tests with samples from children under five in **Lusaka Province.**

3. What we want to know

What is the prevalence of markers of **environmental enteric dysfunction (EED),** and how do they affect rotavirus vaccine immunogenicity? What are the **common causes of diarrhoea** in Zambia after introduction of rotavirus vaccines?

4. Study Design: Diagnostic Testing

Researchers will also use a state of the art molecular based **Luminnex platform** to assess the prevalence of 15 common enteric pathogens in stools.

5. Study Design: Serum Samples

Researchers will **measure the prevalence of both stool and serum markers of EED** in an existing cohort of Zambian infants. We will then evaluate any associations of the EED markers with rotavirus vaccine uptake.

6. What we'll measure: Laboratory Assays

We'll test over 2000 stool samples of Zambian children under 5 years old who presented to health facilities with diarrhoea. This will result in describing the comprehensive epidemiology of diarrhoea post-rotavirus vaccine introduction in Zambia. **We'll also evaluate associations between presence of EED markers and rotavirus vaccine seroconversion in order to ascertain the effect of EED on vaccine uptake.**

7. Relevance

This study will show the changing diarrhoea epidemiology following vaccine introduction and will improve the global evidence base on live oral vaccine performance.

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