Use of gastrointestinal pathogen panel to identify aetiology of diarrhoea in children under five in Zambia

Caroline Cleopatra Chisenga[1], Samuel Bosomprah[1,2], Natasha Makabilo Laban[1], Katayi Mwila-Kazimbaya[1,3], John Mwaba[1,3] Michelo Simuyandi[1], Roma Chilengi[1,]
[1]Research Department, Centre for Infectious Disease Research in Zambia, Lusaka, Zambia
[2]Department of Biostatistics, School of Public Health, University of Ghana, Legon, Accra
[3]Department of Biomedical Sciences, School of Health Sciences, University of Zambia, Lusaka, Zambia

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Background
We aimed to document viral, bacterial, and protozoan enteric pathogens and the aetiology of moderate-to-severe diarrhoea among children under five presenting at public health facilities in Zambia following the introduction of rotavirus vaccination.

Methods
This was a cross-sectional study in which clinical data and stool samples were collected between July 2012 and October 2013 from children under five years presenting to outpatient clinics in Lusaka province with moderate-to-severe diarrhoea. The study was conducted during the early months post rotavirus vaccine introduction in Zambia. We used Luminex x-TAG® gastrointestinal pathogen panel to simultaneously detect enteric viruses, bacteria and protozoa from the stool samples. We applied the population attributable fraction to estimate pathogen-specific burden of moderate-to-severe diarrhoea.

Results
We analysed 1,135 unique stool samples with clinical data, of which 56% had received one or full dose rotavirus vaccination. The median age was 14 months (IQR=8, 22). The prevalence of moderate-to-severe diarrhoea was estimated as 18.9% (95%CI=16.7, 21.2). The most attributable cases of moderate-to-severe diarrhoea were due to rotavirus (attributable fraction=24.5%; 95%CI=[5.4, 39.7]) followed by *Shigella spp.* (attributable fraction=6.7%; 95%CI=[0.1, 15.5]). The top 5 enteric pathogens detected among children were rotavirus (67.6%), *Adenovirus* (41.5%), ETEC (40.7%), *Salmonella* (38.4%), and *Giardia* (37.0%).

Conclusion
We found that about one-third of moderate-to-severe diarrhoea among children were attributable to rotavirus and *shigella spp*.