

Impact of rotavirus vaccination in children less than 5 years of age in Rural Southern Mozambique

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Background

Rotavirus vaccine (Rotarix, GSK Biologicals) was introduced into the Mozambican National Immunization Program in September 2015, with the objective of reducing the burden of both total and rotavirus-associated diarrheal disease. We evaluated the impact of rotavirus vaccine in reducing all-cause admissions and rotavirus-associated diarrhoea in pre and post-introduction.

Methodology

We analysed stool samples collected from children under five years old, between January 2008 and November 2012 (pre-vaccine introduction) and September 2015 to December 2018 (post-vaccination), attended at the Manhiça District Hospital with moderate-to-severe diarrhoea. We compared annual changes in rotavirus positivity, and estimated the number of all admissions and rotavirus specific cases averted by the vaccine. Rotavirus detection was performed using enzyme immunoassay.

Results

Overall, rotavirus positivity declined from 32.4% (295/915) in the pre to 22% (13/59) three years after vaccine introduction (2018). Diarrhoeal associated mortality showed slight decline from 8.4% (69/824) to 5.1% (12/236); while HIV co-infection was almost unchangeable, 23.8% (51/214) and 26.2% (37/140), in the pre and post-vaccine, respectively. In post vaccine introduction period, rotavirus positivity was higher among HIV infected individuals compared to uninfected ones (45.5%; 11/24 vs. 22.4%; 26/116, $p=0.004$); and over a fourth (26.6%; 33/124) of vaccinated children had rotavirus antigen detected in their stools. Coverage of rotavirus vaccine was estimated to be 89% in 2017. The estimated number of hospital admissions averted by the vaccine was 1,163 (95% interval estimates [IE]: 1,118 – 1,210), corresponding to a 38% (95% IE: 37 – 39) reduction of the expected admissions.

Conclusions

The slight decline of rotavirus associated diarrhoea may be driven by the prevalence of HIV infection in this community, reinforcing the need to continuously improve vaccine coverage, while specifically assessing the immune response against rotavirus in immunized children.

Key words: rotavirus vaccine, impact, HIV, genotypes