Impact and cost effectiveness of rotavirus vaccination in 73 Gavi countries

Clint Pecenka , PATH Seattle

Background and aims

Immunization has been a cornerstone of cost-effective reductions in child mortality and PHC is an essential tool to continue health progress globally. Previous cost-effectiveness analyses of rotavirus vaccination have found rotavirus vaccination to be highly cost-effective in low- and middle-income countries around the world and especially across Africa. Since the last cost-effectiveness estimates of rotavirus vaccination across Gavi countries, there have been many changes in global trends and new evidence is now available. Rotavirus mortality has decreased from 528,000 to 215,000 deaths worldwide, countries have experienced economic growth, additional countries have adopted rotavirus vaccines, rotavirus vaccine prices have decreased, and new products are entering the market. The purpose of this study is to reevaluate the impact and cost-effectiveness of rotavirus vaccination across Gavi countries, and Africa in particular, in light of these changes and the push toward UHC.

Methods

This analysis estimates the costs and benefits of rotavirus vaccination projected across 10 birth cohorts from 2018 to 2027 in 73 Gavi countries using the recently developed PROVAC’s UNIVAC model. We track benefits and cost of vaccination for these cohorts over the first five years of life. During the period of analysis, individuals may or may not get rotavirus disease. If they get rotavirus disease, it can be non-severe or severe. Non-severe disease results in recovery with or without outpatient care. Severe disease results in recovery or death with or without outpatient or inpatient care. We also account for potential intussusception cases linked to rotavirus vaccination.

Results

The analysis estimates the number of rotavirus gastroenteritis cases, outpatient visits, hospitalizations, and deaths averted by the vaccine. Analysis outputs also include economic benefits expressed in terms of cost of care averted. Total cost of vaccination programs is also calculated. Cost-effectiveness results use the discounted incremental cost-effectiveness ratio (ICER) expressed in US$ per Disability Adjusted Life Years (DALYs) averted from the government and societal perspectives. Results are expressed for all countries as well as per WHO Region.

Conclusions

Rotavirus vaccination remains highly cost-effective across Gavi countries though many of the important global trends contribute to higher cost-effectiveness ratios. This finding is particularly relevant for countries, including many in Africa, facing increased budget pressure due to declining international support and a desire to achieve cost-effective PHC.