

Effectiveness of Pentavalent Rotavirus Vaccine against G1-strain rotavirus, Burkina Faso, 2014-2017

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The findings and conclusions in this abstract are those of the authors and do not necessarily represent the official position of the US Centers for Disease Control and Prevention (CDC) or WHO

Background

The introduction of pentavalent rotavirus vaccine (RV5) into the national immunization program of Burkina Faso in October 2013 demonstrated significant reductions in rotavirus-gastroenteritis hospitalizations. We now describe the distribution of circulating rotavirus strains and the strain-specific vaccine effectiveness (VE) of RV5 following vaccine introduction in Burkina Faso.

Methods

We prospectively enrolled children <5 years of age hospitalized with acute gastroenteritis (AGE) through active, hospital-based surveillance at 4 sites in Burkina Faso during January 2014-December 2017. Positive cases tested by ELISA were genotyped using RT-PCR. To evaluate VE, a test-negative case-control design was used and analyses were restricted to children who were age-eligible for RV5 receipt and aged 6 months or older at time of enrollment. Cases were defined as children with G1 rotaviruses identified in their stool, while controls were children with rotavirus-negative stools. Unconditional logistic regression was used to determine the VE (1-odds ratio) of RV5 against G1-rotavirus AGE.

Results

We enrolled 835 children with rotavirus positive AGE, 186 (22%) of which were age-eligible for RV5 receipt, aged greater than 6 months and had immunization records and genotyping results available. We also enrolled 983 rotavirus negative controls of same age and had immunization records available. G1 and P8 were the most common G and P-type strains, which were detected in 78% (146/186) and 52% (97/186) of samples, respectively. Mixed genotypes accounted for 108 (58%) of the samples, while 66 (35%) and 12 (6%) were homotypic and heterotypic, respectively, to the vaccine strains. The main genotypes circulating by year were 43% (3/7) G12P[6] in 2014, 45% (19/42) G1P[8] in 2015, 46% (19/41) G1P[8] and 41% (17/41) G1P[6] in 2016 and 28% (27/96) G1P[8] and 26% (25/96) G1P[6] in 2017. The adjusted VE for full 3-dose series of RV5 against G1-rotavirus hospitalization was 62% (95% CI, 9%-84%) in children 6-11 months of age. Samples sizes were insufficient to evaluate VE against other circulating strains.

Conclusion

G1P[8] and G1P[6] were the predominant genotypes seen in Burkina Faso after RV5 introduction. RV5 significantly protected against G1 rotavirus hospitalizations in infants, including those with P types not included in the vaccine formulation.