Rotavirus gastroenteritis and strain diversity in Saudi Arabia. *Current status and future prospects*

To the Editor

I would like to comment on the interesting study by Kheyami[1] on the rotavirus gastroenteritis and strain diversity in Saudi Arabia.

First, rotavirus infection is the most common cause of severe diarrhea disease in infants and young children worldwide and continues to have a major global impact on childhood morbidity and mortality. Vaccination is the only control measure likely to have a significant impact on the incidence of severe dehydrating rotavirus disease. I presume that it is critical to incorporate rotavirus vaccine into the infant vaccination program in Saudi Arabia, as it is still a significant health problem.

Second, experience gained through studies of natural rotavirus infection and the clinical trials for the current and previous rotavirus vaccines indicate that, as countries begin to introduce these newly approved vaccines into routine childhood vaccination programs, monitoring their performance in real world settings should be a high priority. The key epidemiological considerations in the post-licensure period include: 1) How the vaccine will perform against severe rotavirus disease under routine public health use. 2) How routine vaccination will impact the epidemiology of disease with regard to the burden of severe disease and death, age distribution of cases, seasonality, and serotype distribution. 3) Whether vaccination will have a sufficient impact on transmission to reduce disease burden in unvaccinated age groups. 4) Whether vaccine will confer protection through the first 3 years of life, when most severe disease and mortality associated with rotavirus occur.[2]

Third, Kheyami[1] demonstrated the presence of serotype G1-G4, G9, G12, P[4], P[6], and P[8]. This is really interesting on considering the observation that at present, 5 rotavirus serotypes (G1, G2, G3, G4, G9) are globally the predominant circulating strains, accounting for approximately 95% of strains worldwide, although there is considerable geographic variability. Incidence rates for various serotypes also vary temporally with seasonal and year-to-year fluctuations. Unusual serotypes are generally uncommon, but new serotypes can emerge. The heterogeneity and ever-changing epidemiology of rotavirus underscores the need for continued surveillance to ensure that vaccination programs provide optimal protection. Two recently developed vaccines (RotaTeq [rotavirus vaccine, live, oral, pentavalent], and Rotarix [rotavirus vaccine, live]) share some characteristics of an ideal rotavirus vaccine. They have high efficacy, excellent tolerability, and no increased risk of intussusception. However, these 2 vaccines could not completely cover the rotavirus strain profile installed by Kheyami.[1] I, therefore, presume that the scope of rotavirus strain installed by Kheyami[1] might constrain the successful efficacy of the currently available rotavirus vaccine in the proposed infant vaccination program in Saudi Arabia. It should be kept in mind that even on implementing the national rotavirus vaccination program, it is essential to institute post-marketing rotavirus strain surveillance to monitor rotavirus strain diversity and its efficacy against possible new emerging genotypes.

Fourth, to facilitate decision making to successfully implement rotavirus vaccination program, Kheyami[1] did well in addressing certain essential prerequisites need to be considered, namely, the need to clearly ascertain wide country rotavirus strain surveillance, efficacy, and cost effectiveness of the program. Additionally, the following 4 considerations merit particular attention: 1) there is a growing concern regarding the safety of rotavirus vaccine in severely immunocompromised patients.[3] 2) the transmission of vaccine-derived rotavirus strains from vaccinated children to unvaccinated contacts harbors the potential for herd immunity. The occurrence of that transmission might result in symptomatic rotavirus gastroenteritis that required emergency department care. It is suggested that reassortment between vaccine component strains of genotypes P7[5]G1 and P1A[8]G6 occurred during replication either in the vaccinated infant or in the older sibling, raising the possibility that this reassortment might have increased the virulence of the vaccine-derived virus.[4] 3) breast feeding might ameliorate the immunological response to rotavirus vaccine. It is recently found that the higher titers of immunoglobulin A and neutralizing activity in breast milk consumed by infants at the time of receiving rotavirus vaccine could effectively reduce the potency of the vaccine. This might explain why live oral rotavirus vaccines tend to be less immunogenic and efficacious among children in poor developing countries compared with middle income and industrialized countries.[5] 4) there is a theoretical risk of potential interaction between rotavirus vaccine concomitantly administered with other vaccines. This might influence reactogenicity, immunogenicity, and

stability, and will complicate laboratory control tests, but these have not yet fully assessed.

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Reply from the Author

No reply was received from the Author.

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