CLIPPINGS

Theme: Rotavirus

Estimates of Rotavirus Mortality in Under-five Children. (*Clin Infect Dis. 2016;62:S96-105*)

This article is a systematic review of all published papers – and WHO rotavirus surveillance network data – to estimate global, regional, and national rotavirus mortality in under-five children over a period of 14 years (2000-2013). A multiple linear regression model showed that globally, the predicted annual rotavirus detection rate declined from 42.5% (95% CI 37.4-47.5%) in 2000 to 37.3% (95% CI 34.2-40.5%) in 2013, and the number of rotavirus deaths declined from 528000 (range, 465000-591000) in 2000 to 215000 (range, 197000-233000) in 2013. An estimated 47100 rotavirus deaths occurred in India in 2013, accounting for 22% of the global rotavirus deaths. Four countries (India, Nigeria, Pakistan and Democratic Republic of Congo) accounted for approximately half (49%) of all estimated rotavirus deaths in 2013.

Age at First Rotavirus Vaccination and Risk of Intussusception in Infant. (*Drug Saf. 2016 Apr 11. [Epub ahead of print]*).

A five-fold increase in intussusception in the first week after the first dose, and two-fold after second dose of current rotavirus vaccines have been reported which may further add to the naturally occurring increased incidence of intussusception between 3 to 8 months of age. This public health risk analysis was carried out to model the impact of age at first rotavirus vaccination and risk of excess intussusception hospitalizations in infants. The risk of intussusception was lowest (1 in 49,000) if both first and second doses were given at age <3 months followed by 1 in 41,000 if first dose was given at age <3 months and second dose was given at 3-5 months of age. Risk was highest (1 in 11,000) if the infants received both doses after 3 months of age. The authors recommended administration of first two doses of rotavirus vaccine before the age of 3 months to minimize the risk of intussusception following rotavirus vaccination.

Binding specificity of P[8] VP8* proteins of rotavirus vaccine strains with histo-blood group antigens. (*Virology. 2016;495:129-135*)

P(VP4) genotype of rotavirus is a protease-sensitive protein that can be cleaved into VP5* and VP8*. VP8* recognizes histo-blood group antigens and plays an important role in productive rotavirus infection. In this study, oligosaccharide and saliva-based binding assays were carried out to examine the binding specificity of P[8]VP8* protein of two common rotavirus vaccines, RotaTeq and Rotarix. P[8]VP8*-glutathione S-transferase proteins of RotaTeq and Rotarix showed obvious binding to saliva samples for each of the A, B, and O types, indicating that vaccine effectiveness may correlate with the individuals' secretor status. It was concluded that as live-attenuated vaccines have weak vaccine efficiency in non-secretors, RotaTeq and Rotarix may be of better efficiency in areas with a high percentage of secretors. Inactivated or subunit vaccines should be developed for areas with a high percentage of non-secretors.

Unusual rotavirus genotypes in humans and animals with acute diarrhea in Northeastern India. (*Epidemiol Infect. 2016 Apr 26:1-10*)

Rotavirus can cause acute infantile diarrhea in both humans and animals. Close humans-to-animals proximity may lead to cross-species infection and emergence of novel/unusual strains by genetic reassortment. This study analyzed 500 diarrheal samples for group A rotaviruses (RVA) from children (*n*=290), piglets (*n*=95) and calves (*n*=115) in Northeastern India during 2012-2013. Overall, 28.4% fecal samples were positive for RVA. Highest number of infection was detected in piglets (40.1%) followed by children (35.9%) and calves (23.9%). G1P[8] (25%) and G1P[7] (35%) were the prevailing genotypes in both humans and animals with single cases of G9P[8], G5P[8] in humans and G1P[13], G1P[23] and G3P[7] in animals. Cluster analyses of sequences showed close genetic association of regional strains to their homologous strains. However, human G5P[8] and porcine G1P[8] strains showed homology to heterologous hosts of their prototype strains. Continuous surveillance of infections from diverse hosts in a common setting is recommended to detect global spread of such unusual strains.

Can different rotavirus vaccines be used to complete the vaccination schedule? (*Pediatrics. 2016;137:1-10*)

At present we have several licensed rotavirus vaccines with proven efficacy by using 2 or 3 doses (as per manufacturer's instructions) in a given child. In certain situations, it may not be possible to complete the schedule by using the same vaccine formulation. This randomized, multicenter, open label study compared the immune responses to the 2 licensed rotavirus vaccines when administered as a mixed schedule compared with administering a single vaccine formulation alone. 1393 Healthy infants (age 6–14 wk) were randomized to receive rotavirus vaccines in 1 of 5 different schedules (2 using the same vaccine for all doses, and 3 using mixed schedules). The group receiving only the monovalent rotavirus vaccine received 2 doses of vaccine and the other 4 groups received 3 doses of vaccine. One month after the last vaccine dose, immune responses (rotavirus immunoglobulin A ≥20 U/mL) to all the sequential mixed vaccine schedules were shown to be non-inferior when compared with the single vaccine reference groups. The proportion of children seropositive to at least 1 vaccine antigen at 1 month after vaccination ranged from 77% to 96%, and was not significantly different among all the study groups. All schedules were well tolerated.

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