

Diarrheic disease due to rotavirus: magnitude, introduction of the vaccine, and challenges for epidemiological surveillance

Rotavirus infection is the principal cause of severe diarrhea in children, contributing to high hospital morbidity and mortality. In Brazil, studies in the last seven years have shown that between 20.6% and 37.6% of hospital treatments for diarrheic disease in children under five were associated with rotavirus infection. In absolute terms, if we consider the mean number of hospital admissions in the Unified National Health System (including both public and outsourced hospitals) due to diarrheic disease of putative infectious origin, in this preschool age group in the last three years we can estimate the mean number of yearly hospitalizations due to rotavirus-related diarrhea at some 25,660 to 46,836 cases. The impact on mortality from rotavirus-related diarrheic disease is also relevant. Assuming that 40% of deaths due to diarrheic disease in children under five are due to rotavirus, and considering the estimated number of deaths from diarrheic disease of putative infectious origin, in the last three years we can estimate the mean number of rotavirus diarrheic disease-related deaths at approximately one thousand. Another relevant characteristic of the disease is its high capacity to spread, as shown by the occurrence of epidemics in various States of Brazil in recent years.

However, there is diversity in this disease's distribution in Brazil, related to apparent seasonality and the intensity according to region of occurrence. Another source of diversity relates to the different serotypes (or genotypes) that are detected, varying not only between States where cross-sectional studies have been conducted but also over the course of the years. In recent years new serotypes have been detected that become predominant for a variable length of time.

Considering such magnitude and severity of the disease, mainly affecting an especially vulnerable age group, the recent availability of vaccines with efficacy and safety proven through trials held in various countries, including Brazil, and the feasibility of their acquisition, the Brazilian Ministry of Health has introduced the rotavirus vaccine in the basic immunization schedule as of March 2006, offering it free of cost to all children under six months of age.

However, in order for favorable results to be achieved and documented, and in order to expand knowledge on the disease, it is crucial to organize epidemiological surveillance in all the States, which poses some challenges for effective implementation. As discussed above, there are no specific population data on rotavirus-related diarrheic disease, and improvement is needed in the use of estimates from hospital-based studies, applying them to hospital and mortality databases. A strategy adopted by the Ministry of Health, aimed at backing population data and assessing the vaccine's impact, is the development of a sentinel hospital network, which allows more precise and continuous recording of the disease in under-fives. To complement the above approach and ensure timely control measures, improvement is needed in the surveillance of diarrheic diseases, currently conducted in all States of the country, adjusting the surveillance to detect epidemics, in which circulating serotypes are identified. On this point, testing by the national network of public health laboratories has been expanded. Finally, the implementation of a surveillance network for adverse events has allowed monitoring the occasional occurrence of severe cases, especially intussusception, which may be temporally associated with vaccination.

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