



Navigating Rotavirus Vaccination: A Global Perspective on Progress and Challenges

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Rotavirus infection is a significant cause of childhood morbidity and mortality, resulting in severe diarrhea, dehydration, electrolyte imbalances, and metabolic acidosis in infants and young children (1). The destruction of enterocytes following rotavirus infection can lead to malabsorption, which is the inability to absorb nutrients from the intestines. Gastroenteritis may also be a risk factor for developing inflammatory bowel disease (IBD), and gastrointestinal infections can exacerbate colitis in patients with existing IBD (2).

Rotavirus remains the leading cause of diarrheal deaths globally, accounting for nearly 19.11% of such deaths in 2019 (3). Global statistics reveal that 80% of rotavirus-related deaths occur in developing nations. Notably, India, Nigeria, Pakistan, and the Democratic Republic of Congo, continue to account for a substantial portion of rotavirus deaths (4). While the overall Age-Standardized Death Rate (ASDR) has declined, regional variations persist, with Africa, Oceania, and South Asia facing a considerable burden that requires a nuanced approach to public health strategies (3).

The World Health Organization (WHO) recommends widespread rotavirus vaccination, especially in regions where the burden of diarrheal-related deaths in children is substantial. A systematic review and meta-analysis provide valuable insights into the economic aspects of rotavirus vaccination. The findings suggest that introducing rotavirus

vaccines in both low-income countries (LICs) and low- and middle-income countries (LMICs) would be cost-effective. Notable progress has been made in countries implementing rotavirus vaccination programs, preventing an estimated 125,000 hospitalizations and 800 deaths in 2015 (5). The review highlights the disparity in death burdens between high-income and low-middle-income countries, emphasizing the importance of targeted vaccination initiatives in resource-constrained settings.

A comprehensive evaluation of the efficacy and safety of rotavirus vaccines is crucial for informed decision-making. Rotarix® (RV1) and RotaTeq® (RV5) exhibit effectiveness in preventing rotavirus diarrhea, with varying levels of efficacy in different age groups (6). The studies highlight the vaccines' ability to significantly reduce severe cases, hospitalization rates, and overall disease burden. The absence of an increased risk of adverse events, including intussusception, is reassuring. However, ongoing surveillance monitoring is recommended, especially in countries introducing the vaccine nationally.

The compilation of evidence emphasizes the potential advantages of administering rotavirus vaccination in the context of colorectal disease. Decision-makers can leverage this information to prioritize and implement vaccination programs, particularly in regions where the disease burden is

high. The evidence supports the cost-effectiveness, efficacy, and safety of rotavirus vaccines, providing a compelling case for their widespread adoption (7). As new vaccines emerge, ongoing research and surveillance will be crucial to refining our understanding and optimizing preventive strategies

against rotavirus-related colorectal diseases.

Keywords: Rotavirus Infections; Vaccination; Diarrhea

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