

Norovirus vaccines under development.

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Abstract

Noroviruses (NoVs) are one of the leading causes of acute gastroenteritis, including both outbreaks and endemic infections. The development of preventive strategies, including vaccines, for the most susceptible groups (children <5years of age, the elderly and individuals suffering crowding, such as military personnel and travelers) is desirable. However, NoV vaccine development has faced many difficulties, including genetic/antigenic diversity, limited knowledge on NoV immunology and viral cycle, lack of a permissive cell line for cultivation and lack of a widely available and successful animal model. Vaccine candidates rely on inoculation of virus-like particles (VLPs) formed by the main capsid protein VP1, subviral particles made from the protruding domain of VP1 (P-particles) or viral vectors with a NoV capsid gene insert produced by bioengineering technologies. Polivalent vaccines including multiple NoV genotypes and/or other viruses acquired by the enteric route have been developed. A VLP vaccine candidate has reached phase II clinical trials and several others are in pre-clinical stages of development. In this article we discuss the main challenges facing the development of a NoV vaccine and the current status of prevailing candidates.