

Oral cholera vaccines; current perspective and future need; towards the development of novel DNA vaccine for Vibrio species

ABSTRACT

About one-third of the countries in the world are on the verge of a cholera outbreak placing over a billion individuals at risk. Water sanitation and health (WASH) programs together with vaccination are preventive measures to eradicate cholera by 2030. While WASH takes a long time to successfully implement, vaccinations can reduce the cholera burden. 2030 is in less than a decade and yet the current WHO prequalified oral cholera vaccines (OCVs) failed to provide sufficient protective immunity to infants – the most affected age group in cholera outbreaks and cholera endemic regions, a shorter immunity in older children and adults, the requirement of multiple doses, and cold-chain for transport and storage are some of the limitations of OCVs and WHO recommends further research to provide better vaccines. DNA vaccine approach could be a potential approach in the future of cholera vaccines, providing ease of vaccine design and hence reducing production time, it is safer and cheaper, stable at room temperature, and can induce both humoral and cellular immune responses. Therefore, this can be a better alternative to the over-dependence on the first and second generations of vaccines.