

Environmental surveillance of rotavirus; lesson learnt from the Global Polio Eradication Initiative

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Clinical surveillance programs for human infectious diseases is aimed at monitoring disease patterns and pathogens strains in the human populations. Therefore, most of the clinical surveillance data on the circulating pathogens come from samples collected from clinical studies especially from patients seeking medical assistance in health centers and hospitals. However, environmental surveillance (ES) of enteric viruses could serve as an additional tool to monitor the transmission of pathogens in a population. This has been a success in the agenda of the Global Polio Eradication Initiative (GPEI) in their effort to eradicate polio globally. Several active surveillance programs on ES of poliovirus (PV) are ongoing in many developing countries where wild type polio virus (WPV) has been reported over the last decade. These countries include Kenya, Angola, Nigeria, India and Pakistan. Rotavirus (RV) surveillance system for monitoring the circulating genotypes/strains can learn from this initiative so as to supplement the clinical and molecular data.

In respect to RV, the WHO has been spearheading the hospital-based surveillance of RV associated disease globally. This has led to a well-documented and a rich database on the burden of the RV disease and genotypes/strains in the pre and post vaccine introduction era.

The already licensed RV vaccines are live attenuated vaccines that are administered orally like the OPV. The OPV has been linked to vaccine derived poliomyelitis in some settings. Just like the ES program with PV, there is much interest in monitoring sewage for both vaccine and wild type strains to understand the efficacy of the RV vaccines and to monitor the circulating genotypes/strains in correlation with the data generated from clinical surveillance. Several studies in Africa and South America have demonstrated the benefit of ES as an additional tool to determine the epidemiology of RV genotypes circulating in a community. All these studies have shown the importance of ES of RV and stressed the need to re-think the strategy in carrying out simultaneous studies both using hospital-based and ES systems.

Monitoring clinical samples alone using hospital-based surveillance systems cannot provide all the data needed to understand the diversity of rotavirus genotypes/strains. Therefore, ES can play a key role in supplementing the clinical data and provide the spatial and temporal distribution and hotspots associated with rotavirus discharges.