Supplementary File 2

Lead author and year	Country	Study design	Study aim	Pathogens investigated	Source(s) of water investigated	Test(s) used	How do the results from wastewater surveillance compare to the epidemic trends in the population?	Study key findings	Gaps revealed by the study
M. Hassine-Zaafrane, 2015	Tunisia	Experimental study	To determine the viral load, the distribution of G and P types of groupA rotaviruses (RV-A) in sewage samples and to compare strains in clinical,animal and environmental samples.	Rotavirus	Biological sewage treatment plant (samples of raw and treated sewage)	RT-PCR and Genotyping	Unclear	The data from the study proposes that STPs may convey not only human sewage but also animal wastes, both of them contaminated with numerous RV-A strains which are not efficiently eliminated by the sewage treatment process and may spread to surface waters.	The study calls urgent need to add viral parameters to water quality surveillance And potential benefit of environmental surveillance as an additional tool to determine the epidemiology of RV-A circulating in a given community.
Hassine-Zaafrane, M, 2014	Tunisia	Experimental study	The study was aimed to genetically characterize the most prevalent GI and GII NoV strains, in order to obtain a rough estimate of the efficacy of disinfection treatments and to compare the results with clinical data documented in the same area during the same period.	Novovirus	Biological sewage treatment plant	RT-PCR, and Squencing	Unclear	The study confirms the wide circulation and the genetic diversity of NoVs in Tunisia and the widespread distribution of NoV variants in both raw and treated wastewater	
Ticha Johnson Muluh, 2016	Nigeria	Cross sectional study	The study was aimed to showcase the linkage of ES to key public health interventions that	Poliovirus	raw flowing sewage, ES samples	2-Phase separation method , Laboratory test	Between 2012 and 2015, Nigeria made timely use of information from ES to	The study confirms that ES can detect the introduction and silent circulation of WPV and cVDPV	The study revealed that ES is still constrained in the high-risk states for poliovirus; its expansion to other

			contributed positively to the interruption of poliovirus transmission in Nigeria.				trigger public health interventions that contributed to the progress made toward the interruption of poliovirus transmission.		states will be guided by viral epidemiology, laboratory capacity to cope with workload, and financial support.
Manasi Majumdar, 2018	Multi-country (UK, Senegal, Pakistan)	Experimental study	The study was aimed to evaluate the Complex Enterovirus Circulation Patterns in Human Populations	Enterovirus	Sewage samples	Next Generation Squencing and RT-PCR	Unclear	The key finding indicate complex enterovirus circulation patterns in human populations with differences in serotype composition between samples and evidence of sustained and widespread circulation of many enterovirus serotypes.	The finding from this study show how this approach can be used for the early detection of emerging pathogens and to improve our understanding of enterovirus circulation in humans.
Evan O'Brien, 2017	Uganda	Comparative study	The study was aimed to quantify the abundance of four human viruses in surface water and wastewater in Kampala, Uganda,	Adenovirus, enterovirus, rotavirus, and hepatitis A virus	Wastewater Treatment Plant (WWTP) influent and effluent	Next Generation Squencing , Metagenomic and RT-PCR	Unclear	The key finding, study proven the prevalence and concentrations of four waterborne viruses, adenovirus, enterovirus, rotavirus, and hepatitis A virus, in wastewater and surrounding surface waters in Kampala, the capital of Uganda	Continuous monitoring of wastewater may contribute to assessing viral disease patterns at a population level and provide early warning of potential outbreaks using wastewater-based epidemiology methods.
Babatunde Olanrewaju MOTAYO, 2016	Nigeria	Prospective analysis of sewage from five states in Nigeria	The aim of the study was to detect and genotype rotaviruses from sewages in Nigeria.	Rotavirus	Sewage samples	The two phase concentration method using PEG 6000 and RT-PCR nd VP7 genotyping by semi-nested multiplex	Unclear	This is the first report of rotavirus detection in sewages from Nigeria. Genotype G1 remains the most prevalent genotype.	This observation calls for an effort by the governmental authorities to implement a molecular surveillance, both clinical and environmental, in order to provide vital information for the

						PCR.			control and the vaccine efficacy not only in Nigeria, but globally.
V. V. Mabasa, 2018	South Africa	Experimental study	The aim of this study was to assess whether wastewater samples could be used for routine surveillance of NoVs, including GII.4 variants.	Novovirus	raw sewage and effluent water samples ,Waste Treatment plant	RT- qPCR and Genotyping	Unclear	Though the data collected in this study has revealed a vast diversity of NoVs, the real-time qRT-PCR and genotyping results are likely an underestimation of the true NoV prevalence and diversity in SA, and the presence of NoVs in effluent water samples is suggestive of inefficient removal of potentially harmful pathogens.	This study has contributed important information to the growing data of NoVs circulating in SA and It has shown that there are at least 16 NoV genotypes circulating in Free State and Gauteng, SA.
Mohamed N. F. Shaheen, 2020	Egypt	Experimental study	The study was aimed to examine the presence of AiV and HBoV in aquatic, sludge, sediment matrices collected from Abu-Rawash wastewater treatment plant (WWTP), El-Rahawy drain, Rosetta branch of the River Nile in Egypt	Aichi virus, and human bocavirus	Wastewater treatment plant, river water and river sediment samples, drainage water and drain sediment samples, sewage and sludge samples	Conventional PCR	The findings show a wide circulation of AiV-1 and HBoV in sewage and river water. Even though there is no evidence of waterborne transmission for AiV-1 and HBoV, the frequent presence of both viruses in sewage and river waters suggests that AiV-1 and HBoV are widely distributed in the Egyptian population.	The study demonstrated the presence of AiV and HBoV in various types of water samples that are valuable to environmental risk assessment.	The study show the importance of environmental monitoring as an additional tool to investigate the epidemiology of AiV and HBoV circulating in given community.

Béji-Hamza, A, 2014	Tunisia	Cross sectional study	The study was aimed to assess the occurrence of hepatitis A virus (HAV) in Tunisia through the monitoring of urban wastewaters collected at wastewater treatment plants (WTPs), to characterize environmental strains; and to estimate the viral load in raw and treated sewages, in order to evaluate the potential impact on superficial waters receiving discharges	Hepatitis A Virus (HAV)	Wastewater treatment plant, and raw and treated sewages	PCR/Nested and Quantitive PCR	The quantitative data showed high viral loads in influents and as well as effluents, suggesting that contaminated water could be a critical element in transmission and is very crucial in control in general population	The finding of this study revealed that there is a wide circulation of the pathogen in the population, most probably in the form of asymptomatic infections, a finding consistent with the classification of the country as having intermediate/high endemicity.	Five unique variants were also detected, not previously reported in clinical cases.