Memo
Towards a harmonized wastewater surveillance protocol for COVID-19, polio and AMR

Background – Wastewater surveillance of SARS-CoV-2, Dutch findings and advantages

The National Institute for Public Health and the Environment (RIVM) was one of the first in the world to detect SARS-CoV-2 in wastewater ([5.1.2e] [5.1.2e]). Wastewater sampling is performed in addition to human surveillance for COVID-19 and SARS-CoV-2. Such integrated national surveillance is unique in the world. At RIVM, wastewater surveillance is also used for polio and AMR. This has respectively shown the poliovirus eradication status and which part of resistant bacteria originates from healthcare institutions and from the general public.

In wastewater, one finds not only the virus from tested persons (e.g. patients and healthcare workers), but also from untested people. This also includes individuals before they develop symptoms, when symptoms have passed and people who do not develop symptoms. In the Netherlands, the value of this surveillance has proven itself because wastewater was already SARS-CoV-2 positive when only a few cases were known ([5.1.2e] This is confirmed by an increasing number of studies in other countries.

Wastewater surveillance – where?

There is a great interest in COVID-19 wastewater surveillance from all over the world. The advantage of this method is that one sample contains information from a large population at once, enabling to gain insight into local and regional distribution of virus. This is of particular importance in countries where limited individual testing is possible, and where there is little insight into the state of the outbreak. In these data-limited areas, this type of surveillance can contribute to decisions about interventions and convince policy makers.

Proposed activities: Harmonisation, guidance and roll-out

Many individual countries currently request guidance on the establishment of SARS-CoV-2 surveillance. At RIVM, we received requests from e.g. India, Brazil, Malaysia, Italy, Ethiopia, Germany and Mozambique. Guidance is especially needed on the choice of sampling locations and sampling methodology. WHO guidance on wastewater sampling has already been generated in the framework of polio environmental surveillance, and of One Health AMR surveillance. Here, we propose to establish guidelines for SARS-CoV-2 wastewater surveillance aligning with AMR and polio surveillance. This includes defining target populations, selecting sampling sites, conducting the sampling, and downstream virus analyses. In a second step, we propose to pilot this harmonized wastewater surveillance in a number of countries in all regions of the WHO.

Collaboration and support

This initiative is being rolled out in collaboration with WHO head quarters, who share our view on the importance and complementarity of this work. We are strongly anchored in the three departments involved in COVID-19, polio and AMR being the WHO CC for Risk Assessment of Pathogens in Food and Water and the Global Specialized Laboratory for Polio both situated at RIVM.

Outcome

- A protocol on SARS-CoV-2 wastewater surveillance, harmonized with polio and AMR
- Country experiences with SARS-CoV-2 wastewater surveillance

These activities strengthen the knowledge base at involved institutions and NPHIs.

Costs

- Protocol on SARS-CoV-2 wastewater surveillance, harmonized with polio and AMR: 50kE
- Country pilot on SARS-CoV-2 wastewater surveillance: 40kE / country