Rapid Reviews COVID-19

Review 1: "How early into the outbreak can surveillance of SARS-CoV-2 in wastewater tell us?"

Han Xia¹

¹Wuhan Institute of Virology Chinese Academy of Sciences, Key laboratory of special pathogens and biosafety

Published on: Oct 02, 2020

DOI: 10.1162/2e3983f5.df481e42

License: [Creative Commons Attribution 4.0 International License \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/)

RR:C19 Evidence Scale rating by reviewer:

- **Reliable.** The main study claims are generally justified by its methods and data. The results and conclusions are likely to be similar to the hypothetical ideal study. There are some minor caveats or limitations, but they would/do not change the major claims of the study. The study provides sufficient strength of evidence on its own that its main claims should be considered actionable, with some room for future revision.

General overview:

In this study, the author aims to address the minimal number of cases needed in a community to result in a positive detection of SARS-CoV-2 in the wastewaters of a hospital treating infected patients, and the correlation between N gene abundance in wastewater with the number of hospitalized cases. In their results, they found that > 253 positive cases for every 10,000 people are required to detect SARS-CoV-2 in the wastewater. A weak correlation between N1 and N2 gene abundances in wastewater and the number of hospitalized cases has also been observed. The claims are generally supported by the data and the methods used.

Comments:

1. Usually in the hospital the infected cases are confirmed, and a subset are found to exhibit symptoms. Compared to the individuals exhibiting symptoms, the ones that are asymptomatic have a lower viral load. This should be considered and discussed when the author uses a hospital model to make conclusions for the community.
2. Most of the viral particles or genomes should be attracted to the biological activated sludge in the bottom of the tank. Please explain the reason why about 8 out of 52 samples (15.4%) collected from the biological activated sludge tank were tested positive.
3. Referring to lines 60-61, monitoring for SARS-CoV-2 in wastewater has been done in China and therefore the listed countries should include "China."
4. In line 100, the full names for "LOD" should be mention first.