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WASTEWATER SURVEILLANCE OF SARS-COV-2: RESOURCE LIST

Factsheets, websites, Slack, and listserv

The following resources include factsheets on the presence of SARS-CoV-2 in water and wastewater and on wastewater surveillance. The list also includes an active Slack channel discussing various topics related to SARS-CoV-2, and a listserv of relevant information on SARS-CoV-2 in wastewater.

- University of Arizona: [Gerrity et al., 2020](#) – Updated April 6, 2020
- NYS WRI: [Sayess et al., 2020](#) – Updated October 3, 2020
- NYS WRI: [Hychka et al., 2020](#) – September 25, 2020
- Slack Channel: 2019-ncovwbe.slack.com
- University of Rochester listserv:
<https://lists.rochester.edu/scripts/wa.exe?OK=9A0130D1&L=UNIV-WWS-COVID>

SARS-CoV-2 testing

The following resources are technical protocols on the materials and methods (i.e., methodology) to detect and measure SARS-CoV-2 in water and wastewater samples. Most of these resources are articles that have been published in peer-reviewed journals, with some that are still in pre-print (i.e., they have not been peer-reviewed yet).

- 1) In sewage:
 - [Ahmed et al., 2020](#) (similarly, [Sherchan et al., 2020](#))
 - [La Rosa et al., 2020](#)
 - [Randazzo et al., 2020](#)
 - [Rimoldi et al., 2020](#)
 - [Wu et al., 2020](#)
 - [Medema et al., 2020](#)
 - [Nemudryi et al., 2020](#)
 - [Kumar et al., 2020](#)
 - [Haramoto et al., 2020](#)
 - 2) In river water:
 - [Rimoldi et al., 2020](#)
 - [Guerrero-Latorre et al., 2020](#) (river impacted by sewage)
 - [Haramoto et al., 2020](#)
 - 3) In primary sludge and solids:
 - Peccia et al., 2020
 - Sampling: [Research Protocol: SARS-CoV-2 RNA wastewater sampling: primary sludge](#),
RNA Extraction: [Research Protocol: SARS-CoV-2 RNA extraction from sewage sludge](#),
qRT-PCR: [Research Protocol: SARS-COV-2 qRT-PCR](#)
 - [D'Aoust et al., 2020](#) (preprint)
- * Noteworthy: Designing and utilizing homemade wastewater samplers: Syracuse University and Arcadis: [Kilaru et al., 2020](#) (preprint)

Webinars

The following is a select list of prior and upcoming webinars on the topics of SARS-CoV-2 in water and wastewater and on wastewater surveillance.

- National Institute of Standards and Technology: [Measuring SARS-CoV-2 in Wastewater and Fecal Material: A Call for Standards](#) - June 16, 2020
- International Water Association: COVID-19: [Sewage Monitoring for Public Health](#) - June 19, 2020
- Syracuse University-EFC, NYWEA, Cornell University, SUNY ESF, NYS WRI:
 - [Wastewater Coronavirus Surveillance Systems: Advancing Research and Municipal Coordination Part I](#) - June 23, 2020
 - [Wastewater Coronavirus Surveillance Systems: Advancing Research and Municipal Coordination Part II – Upcoming October 28, 2020](#)
- Genome webinar: [COVID-19 Wastewater-Based Epidemiology: Methods and Insights for SARS-CoV-2 Community Surveillance](#) – August 18, 2020
- California Water Environment Association (CWEA) - [COVID-19 Wastewater Surveillance](#) – August 27, 2020
- Center for Disease Control and Prevention (CDC) and American College Health Association (ACHA): [ACHA COVID-19 “Ask the Expert” Series: Wastewater Surveillance](#) – September 25, 2020
- Sea Grant: [Potential Presence of and Risks from COVID-19 in Water](#) – September 29, 2020
- NYSAC: [Slowing the Spread of COVID-19, Part 1 of 3: Examining Wastewater to Detect Community Spread of COVID-19](#) – May 19, 2020

Funding Opportunities

The following resources are federal and NYS-specific programs that may be available (or have been available) for different state, local, tribal, and other entities to apply to for various aspects of wastewater surveillance.

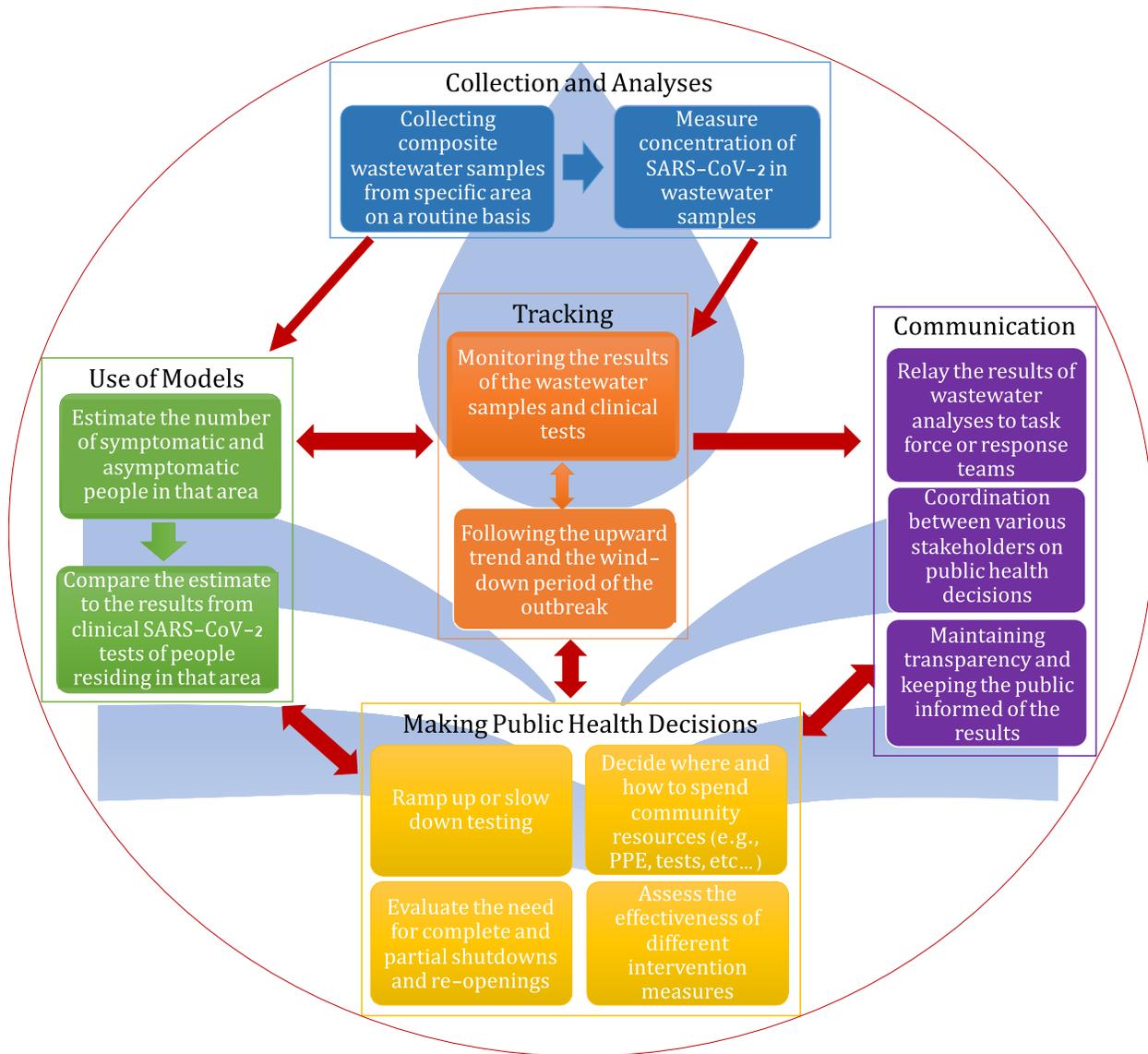
- [CARES Act](#)
 - Provides for payments to State, Local, and Tribal governments navigating the impact of the COVID-19 outbreak
- [Paycheck Protection Program and Health Care Enhancement Act:](#)
 - This law included \$11 billion in resources specifically for States and Localities for testing activities that include surveillance.
- [National Wastewater Surveillance System \(NWSS\)](#)

Each entity receiving funds must submit a plan to HHS for COVID-19 testing for the remainder of calendar year 2020. According to the CDC release, these plans should include:

 - Number of tests needed, month-by-month to include diagnostic, serological, and other tests, as appropriate
 - Month-by-month estimates of laboratory and testing capacity, including related to workforce, equipment and supplies, and available tests
 - Description of how the resources will be used for testing, including easing any COVID-19 community mitigation policies
- Wastewater surveillance pilot program: [NYS announces \\$500,000 for pilot program to test for the virus in wastewater systems as “early warning indicators” to detect COVID-19 spread.](#)
 - Expand initial wastewater sampling undertaken in Onondaga County
 - Start sample collection in Albany, Newburgh, and Buffalo

Decision-Making Diagram

The following decision-making diagram is designed to highlight the different elements and the extent of a successful wastewater surveillance program. The diagram can be used as a planning tool to stakeholders involved in wastewater surveillance efforts.



COVID-19 Tracking Websites

The following websites include notable dashboards on SARS-CoV-2 infections (current and previous) from across the world and from NYS. A comprehensive COVID-19 dashboard on wastewater monitoring in Ohio is also attached at the bottom.

Global dashboards:

- WHO: <https://covid19.who.int/>
- Johns Hopkins: <https://coronavirus.jhu.edu/map.html>
- NYT: <https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html>

New York State dashboards:

- Regional Dashboard: <https://forward.ny.gov/covid-19-regional-metrics-dashboard>
- Association of Counties: <https://www.nysac.org/covidmap>
- SUNY Schools: <https://www.suny.edu/covid19-tracker/>
- Cornell University: <https://covid.cornell.edu/testing/dashboard/>
- Syracuse University: <https://www.syracuse.edu/covid-dashboard/>

*Noteworthy: [Ohio Coronavirus Wastewater Monitoring Network](#) – *Updated almost daily*

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