Why?

- Wastewater testing has been used for modern disease surveillance since the 1940s (samples cultured to detect Polio).
- Recent advances in genetic sequencing and analysis have generated renewed interest in wastewater surveillance as a relatively low cost, non-invasive means to detect and manage infectious disease.
- Wastewater surveillance is an established method of surveillance in other provinces and countries.
- A wastewater surveillance program establishes partnerships within the province and around the country.
- Wastewater testing supplements clinical surveillance.
- Wastewater surveillance may be used to inform predictive models.
- Wastewater surveillance has proven useful as an Early Warning System for the detection of SARS-CoV-2 virus and prevalence of variants of concern.
- Wastewater surveillance results may be used as a basis for Public Health messaging.

How?

- Sample is collected from the municipal wastewater system, typically from a wastewater treatment plant before any treatment occurs.
- Collect either a composite liquid or filter sample.
- Sample is shipped to the National Microbiology Laboratory in Winnipeg for analysis.
- Sample is prepared and viral RNA is quantified using PCR analysis.
- Results as gene copies/mL are sent to Provincial Government employees.
- Special assays or gene sequencing undertaken to identify variants.
- Results are reported via the Results Dashboard (The Poop Report).

The Data!

- Detected Variants of Concern in each wave.
- Delta virus detected in wastewater in a small town Nov 2021 before clinical cases discovered.
- A tale of two pandemics!
- Current established sample sites represent approximately 48% of the NL population.
- Wastewater testing proven useful as “Early Warning” system for detecting COVID-19.
- Detects a community COVID-19 prevalence rate as low as 0.01% (1 virus shedder per 10,000 persons).
- Wastewater data helped show the spread of Omicron throughout NL and that the containment/suppression approach to the pandemic was no longer a viable option.
- Detected 2-6 times more cases than confirmed clinical cases.

IPAC Implications and Moving Forward

- The constant monitoring of wastewater in a community will identify COVID-19 in the community that may not otherwise be detected through individual testing.
- The early detection of SARS-CoV-2 in wastewater, as part of a comprehensive COVID-19 surveillance system could help identify a new emergence of infection in a community including a possible outbreak.
- As wastewater testing surveillance evolves, it may include other pathogens (e.g., AMROs and Influenza).
- Testing sites can include entire communities or targeted sites such as healthcare facilities.
- Trends in wastewater testing have become much more important indicators with the ending of public PCR test clinics, the reliance on individual rapid testing and “staying home when sick” model.
- The benefits of a wastewater surveillance program with COVID-19 will lay groundwork for a permanent provincial program.
- Provincial Public Health Laboratory to increase capacity to include wastewater testing analysis.

Dashboard on government website: