

Public Health Surveillance in Nova Scotia

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Together we should begin by recognizing that the land upon which we work, live, and gather is the traditional territory and ancestral homeland of the Mi'kmaq Nation.

Our relationship is based on a series of sacred and historic Peace and Friendship Treaties.

We pay our respect to the Mi'kmaw People, and recognize in Nova Scotia, we are All Treaty People.

Learning Objectives

1. To provide an overview of Public Health in Nova Scotia
2. To provide insight into the public health surveillance cycle
3. To provide practical examples of surveillance in action in Nova Scotia

Agenda

1. Introduction to Public Health
2. Introduction to Public Health Surveillance
3. Real World Application of Routine Surveillance in Nova Scotia
4. Innovation and past and future projects
5. Wrap up and questions

Introduction to Public Health

1. Public Health in Nova Scotia Overview
2. Governance: Department of Health and Wellness (DHW) and Nova Scotia Health (NSH) roles
3. Overview of DHW, including a focus on Public Health Branch
4. Collaboration and Partnerships

Public Health in NS Overview

Purpose: NS Public Health Standards 2016

*Public health works with others to **understand** the health of our communities and **acts together** to improve health.*

Foundations

- ❖ Public Health is an integral part of a robust and sustainable health system
- ❖ Improves population health overall and reduce health inequities
- ❖ Works collaboratively inside and outside the formal healthcare system
- ❖ Decisions are based on population health status, public health ethics, evidence, and determinants of health

Functions

Health
Protection

Health
Promotion

Chronic Disease
& Injury
Prevention

Surveillance

Population
Health
Assessment

Emergency
Preparedness

NS Public Health Governance:

Department of Health and Wellness (DHW) & Nova Scotia Health Authority (NSH)

- Governor** } **DHW sets strategic policy direction, priorities, and standards for the health system. It also ensures fiscal accountability, and measures and monitors health-system performance.**
- Operator** } **NSH implements direction and delivers services across the province's regional health zones.**
- Steering Committee** } **Senior PH Leadership collaborate on joint strategic planning related to emerging issues, budget forecasting, and governance across all core areas.**

DHW Division, Branches, Offices & Teams

Senior Leadership	Division, Branches, Offices & Teams
Minister: Hon. Michelle Thompson Deputy Minister: Dana MacKenzie	<ul style="list-style-type: none"> • Department of Health and Wellness and Office of Healthcare Professionals Recruitment • Department of Health and Wellness
Associate Deputy Minister: Kim Barro	<ul style="list-style-type: none"> • Office of Healthcare Professionals Recruitment • Health Profession Regulation • Physician Services • Special Operating Agency • Equity and Engagement Team • Benefit Eligibility and Contract Management and Negotiation Support • Policy and Corporate Services
Associate Deputy Minister: Geoff Gatien	<ul style="list-style-type: none"> • Health Infrastructure • EHS • Public Health • Pharmaceutical Services
Chief, Systems Performance and Integration: Colin Stevenson	<ul style="list-style-type: none"> • Planning, Performance and Digital • Primary, Urgent and Emergency Care • Clinical Care Delivery • Strategic Delivery Office (Formerly Health Transformation Office)
Minister: Hon. Brian Comer Deputy Minister: Kathleen Trott Associate Deputy Minister: Kimberly Stewart	<ul style="list-style-type: none"> • Office of Addictions and Mental Health

Focus on Public Health Branch

Established on April 1, 2021

Senior Executives

- Dr. Strang, Chief Medical Officer of Health (CMOH)
 - CMOH reports to DM (MacKenzie)
- Lisa Tobin, Acting Senior Executive Director
 - SED reports to ADM (Gatien)

CMOH Team:

- Dr. Strang, Chief; Dr. Kancir, Deputy Chief; Dr. Cram, Provincial MOH; Katie Mclsaac, Scientific Strategy and Surveillance Specialist; Regional MOHs, admin and policy support

Branch:

- Six teams: Health Promotion, Health Protection, Surveillance, Public Health Emergency Preparedness, Strategic Initiatives, Environmental Health

Collaboration and Partnerships

DHW PH Branch collaborates with various government and non-government organizations , including but not limited to:

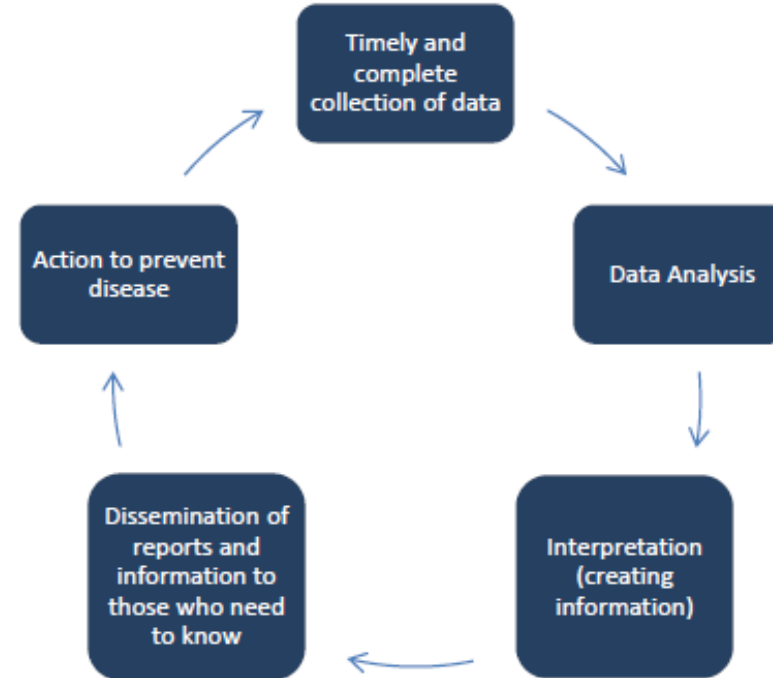
- NS Health and IWK
- Public Health Agency of Canada (PHAC) and Health Canada
- Significant FPT partnerships, including Public Health Network Council
- Other provincial government departments
- Academic Institutions, including Faculty of Medicine at Dalhousie University
- Various non-profit national, provincial, and municipal organizations

Introduction to Public Health Surveillance

What is Public Health Surveillance?

The ongoing systematic collection, analysis, interpretation and sharing of health-related data to support public health decisions and actions

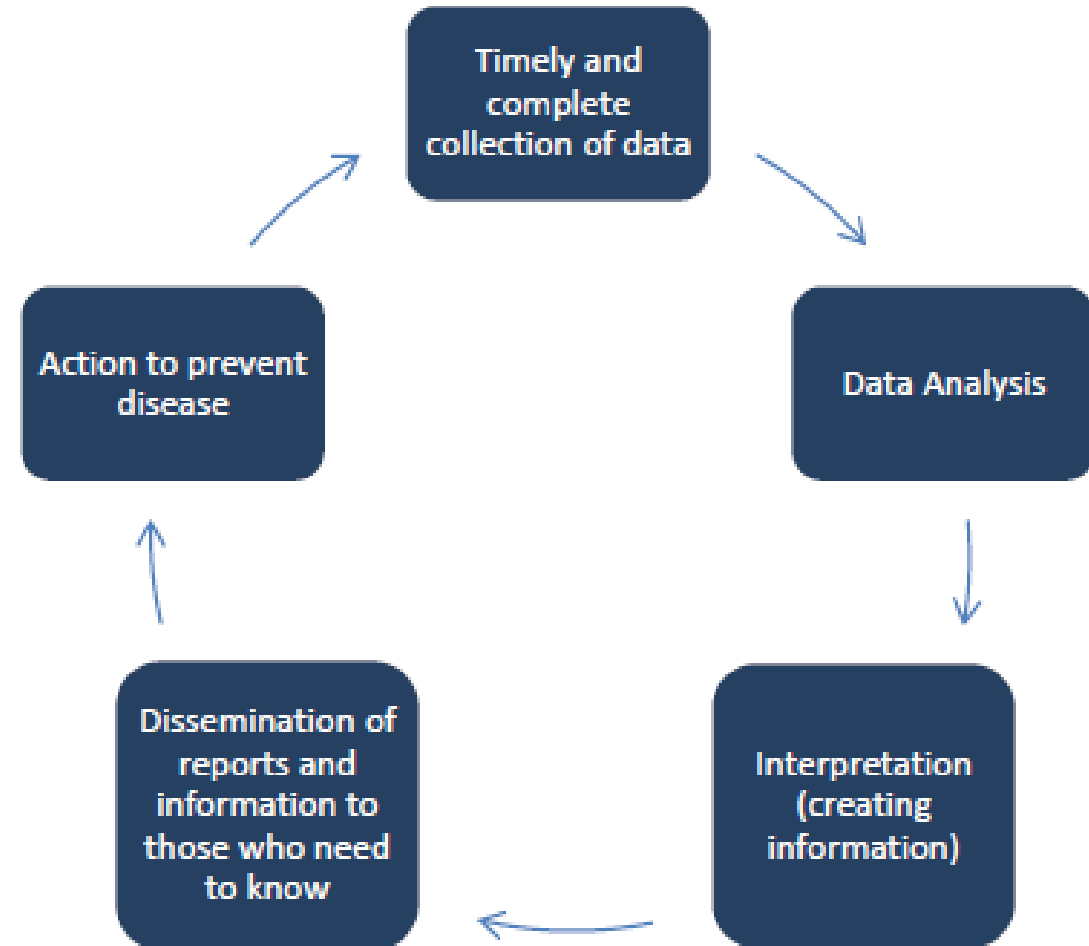
Core Function of Public Health



Public Health Surveillance Guidelines.

Designing a Public Health Surveillance System

- Consider objectives/purpose
- Develop case definitions
- Data collection considerations
 - Source
 - Mechanism
 - Instruments
- Develop analytic approaches
- Disseminate



Objectives / Purpose

- Estimate **magnitude** of health problem
- Detect outbreaks
- Track **distribution** and spread of disease
- Detect groups that have differential risk profiles
- Detect **safety signals** for pharmaceuticals, technologies
- **Monitor changes** in infectious agents
- Support planning and programming
- **Evaluate interventions** (e.g. policy changes, control strategies)

Case definitions

- Clear definition for the condition/disease of interest
 - Considers sensitivity and specificity
 - Highly **sensitive** case definitions cast a **wide net**
 - Highly **specific** case definitions **narrows down** field of potential cases
- Considers **person, place, time**
- Could include different levels of certainty
 - **Confirmed, Probable, Suspect, Person Under Investigation**
- Consider feasibility

System design

- **Passive**

- Diseases are reported to public health by providers, patients, laboratory without active prompts
- Reporting may or may not be legally required

- **Active**

- Public Health seeks out cases by contacting health care providers, reviewing records or running special studies

- **Sentinel**

- A selection of representative sites are chosen to monitor health event/disease of interest

- **Syndromic**

- Focus is on signals of the outcome instead of the outcome itself (e.g. symptom patterns, behaviors)

Data Collection: Considerations

Source

- Primary data collection
- Surveys
- Administrative health data, billings data, registries
- Newer approaches

Instruments

- Create data collection instruments that balance parsimony and disease control/surveillance considerations

Analysis

- Counts
- Rates
- Percents

**Analyses often stratified by characteristics of interest
(person, place, time)**

Analysis

Figure 1. The number and incidence per 100,000 population of all reported Lyme disease cases in Canada per year from 2012 to 2022

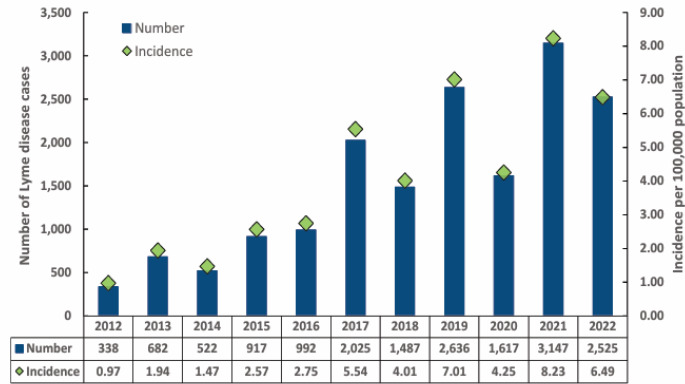


Figure 4. Incidence per 100,000 population of Lyme disease cases by age group and sex in Canada, 2022

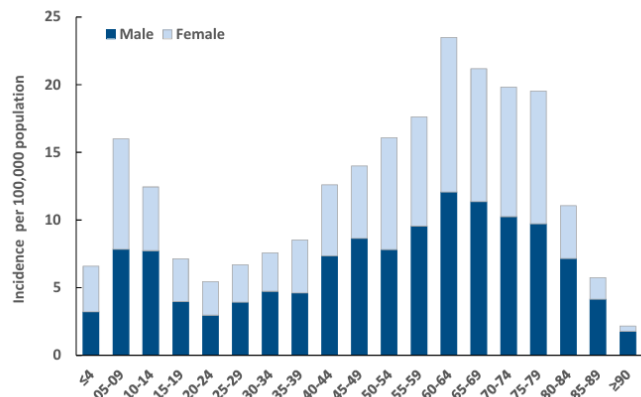


Figure 3. Geographic distribution of all reported Lyme disease cases, 2022

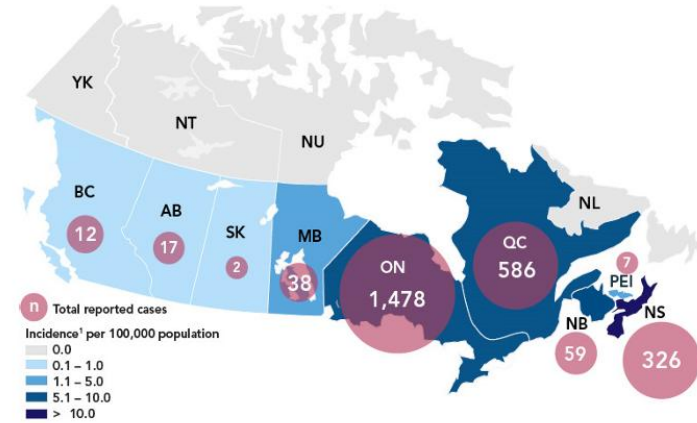
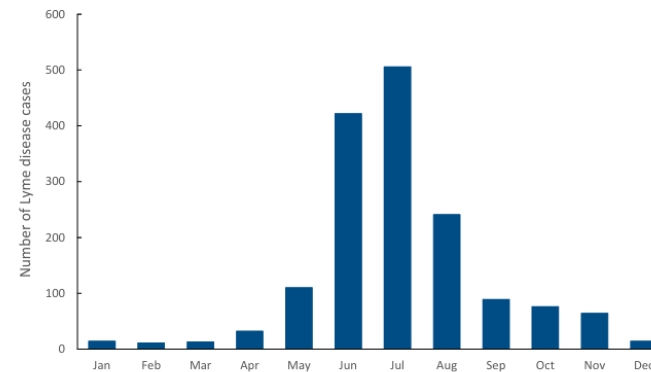


Figure 5. Month of reported illness onset of Lyme disease cases acquired in Canada, 2022



Interpretation

Interpretations should consider:

- Data quality
- Changes to methods over time
 - Case definition
 - Laboratory testing
 - Data collection procedures
- Target population vs included population
 - Changes to population over time
- Generalizability to all populations
 - Are some groups over/underrepresented?

Disseminate

- Reports
- Dashboard
- Publication
- Presentations/Briefing
- Media



Vision 2030: Moving Data to Public Health Action

- A national initiative led by the Public Health Agency of Canada to modernize and strengthen Canada’s public health surveillance system
- Purpose is to build an adaptive, collaborative and integrated “system of systems” able to provide timely insights for actions that improve health and reduce inequities

<https://www.canada.ca/en/public-health/services/publications/science-research-data/vision-2030-moving-data-action.html>

Vision 2030
Moving Data to Public Health Action
An adaptable and collaborative public health surveillance 'system of systems' able to provide timely insights for actions that improve health and reduce inequities for all people in Canada.

System of Systems
...an enabled high-functioning public health surveillance 'system of systems'

Desired States
...the contextual conditions of the enabled public health surveillance 'system of systems'

- Unified purpose and governance
- Well-supported evidence
- Inclusive partnerships
- Integrated health information
- Operational efficiency

Characteristics
...the defining qualities or attributes that drive the overall 'system of systems' in public health surveillance

- Agile
- Connected
- Equitable
- Collaborative
- Coordinated
- High-quality

Challenges
...capture a distinct facet of the issues, barriers, and frustrations that emerged from the qualitative analysis of consultation results

1. Purpose and governance of surveillance
2. Partnerships, collaboration and engagement
3. Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations
4. Workforce competencies, training, and resources
5. Data quality, access, and use
6. Strategic use of technology, tools, platforms, and methods

Opportunities for Action
...to make progress against the challenges in public health surveillance identified through the consultation and expert collection

1. Develop governance frameworks
2. Enhance surveillance systems by integrating local determinants of health
3. Foster collaboration and build trust with communities
4. Create the conditions to implement data standards, health, and public health data sovereignty
5. Address the capacity to monitor surveillance needs to increase the effectiveness of surveillance, health, and public health data sovereignty and inform public health measurement and response
6. Invest in First Nations, Inuit, and Métis health information systems, infrastructure, and workforce
7. Support workforce development
8. Promote interoperability through data standards
9. Review mechanisms for data storage and usage
10. Modernize data infrastructure

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Public Health Agency of Canada / Agence de la santé publique Canada

Canada

Real World Application of Routine Public Health Surveillance

Application of Routine Surveillance in NS

Respiratory Surveillance

- ▶ Respiratory Watch dashboard: [NS Respiratory Watch 2025-26](#)
- ▶ Updated weekly throughout the height of resp season, then bi-weekly thereafter

The screenshot shows a dashboard with a blue header containing navigation tabs: Overview, Cases, Outcomes, Outbreaks, Influenza Like Illnesses, Other Respiratory Illnesses, and Calendar. The main content area is titled 'Summary' and features a 'Current Surveillance Week' button and a 'Current Respiratory Season' label. Below this is a table with columns for COVID-19, Influenza, and RSV, and rows for various metrics. At the bottom, there is a section for 'ILI activity' with a descriptive note.

	COVID-19	Influenza	RSV
Confirmed Cases	15	231	74
Percent Positivity	1.0%	16.3%	5.5%
Hospitalizations	2	16	16
ICU Admissions	0	2	6
Deaths	0	1	0
Acute Care Outbreaks	0	0	0
LTCF Outbreaks	1	1	2

ILI activity During this reporting period (week 11), the percentage of emergency room visits for influenza-like illness was 1.8%, which was similar to 1.7% in the previous reporting period (week 10).

Application of Routine Surveillance in NS

25

Notifiable Disease Surveillance

- ▶ Annual Reports including data tables
- ▶ Key highlights

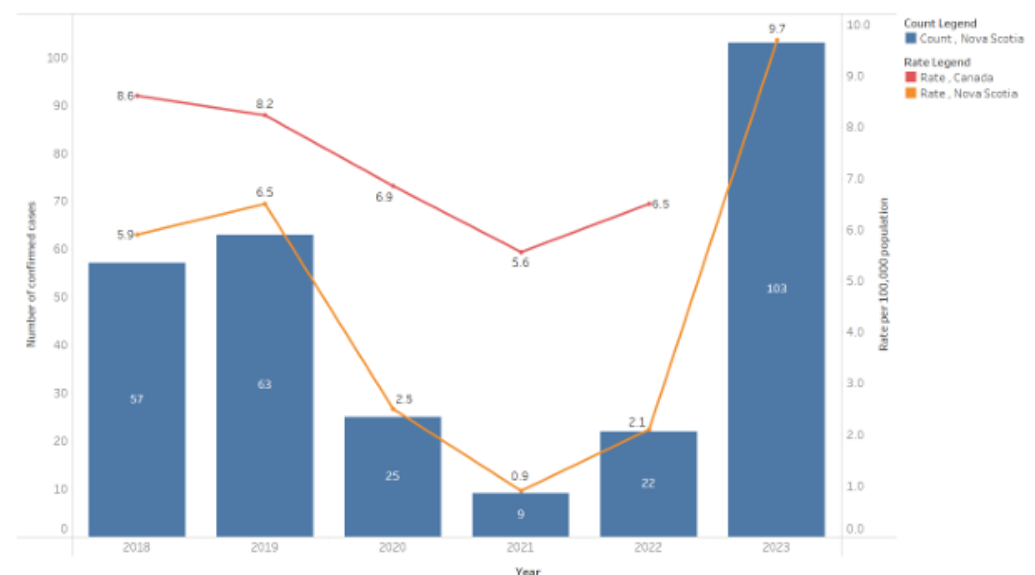


Figure 6. Number and rate per 100,000 population of confirmed iGAS cases by year in Nova Scotia, 2018-2023

Sex-specific iGAS rates per 100,000 population among males and females has followed a similar pattern since 2018, with males typically having slightly higher rates. The rate among both males and females rose substantially between 2022 and 2023, and the 2023 rates per 100,000 population are 1.7 times higher for males and 1.6 times higher for females compared to 2018 rates (Figure 7).

Application of Routine Surveillance in NS

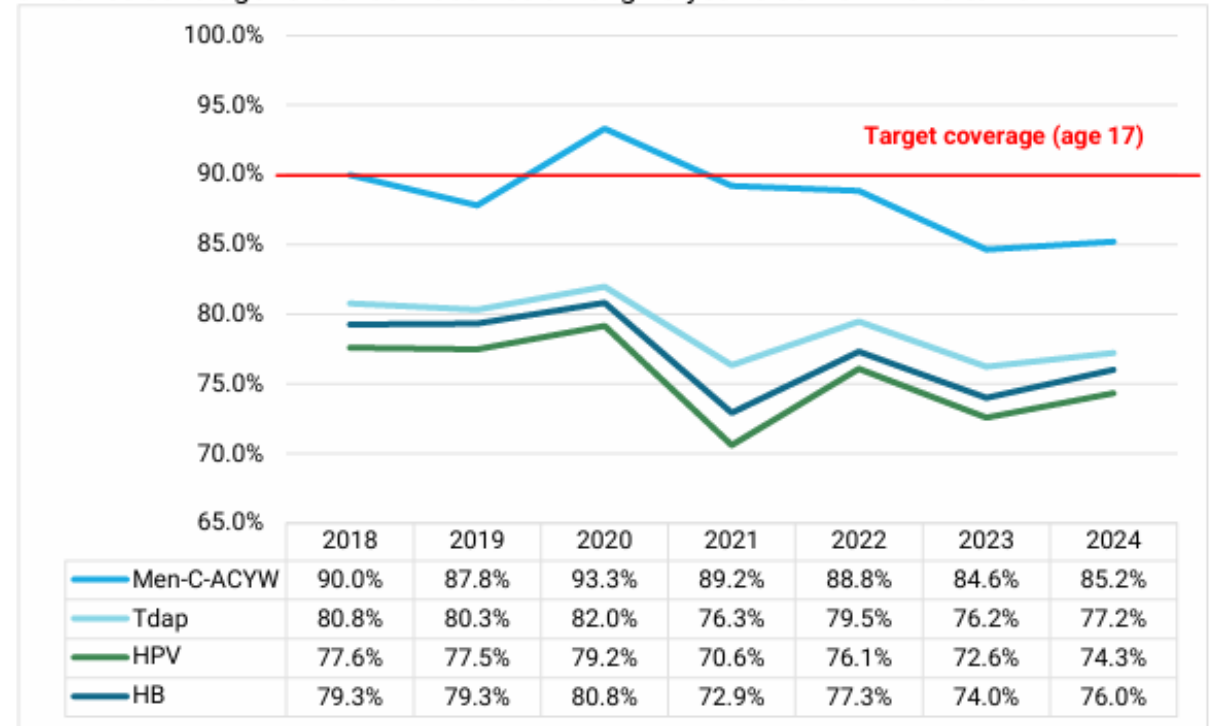
Immunization coverage and safety

▶ Immunization coverage for the vaccines administered as part of the school-based program. Coverage at age 13 and 17.

▶ Immunization coverage for respiratory viruses (influenza, COVID-19, RSV)

▶ Annual AEFI reporting

Figure 1: Full series coverage for school vaccines among 13-year-olds from 2018 to 2024

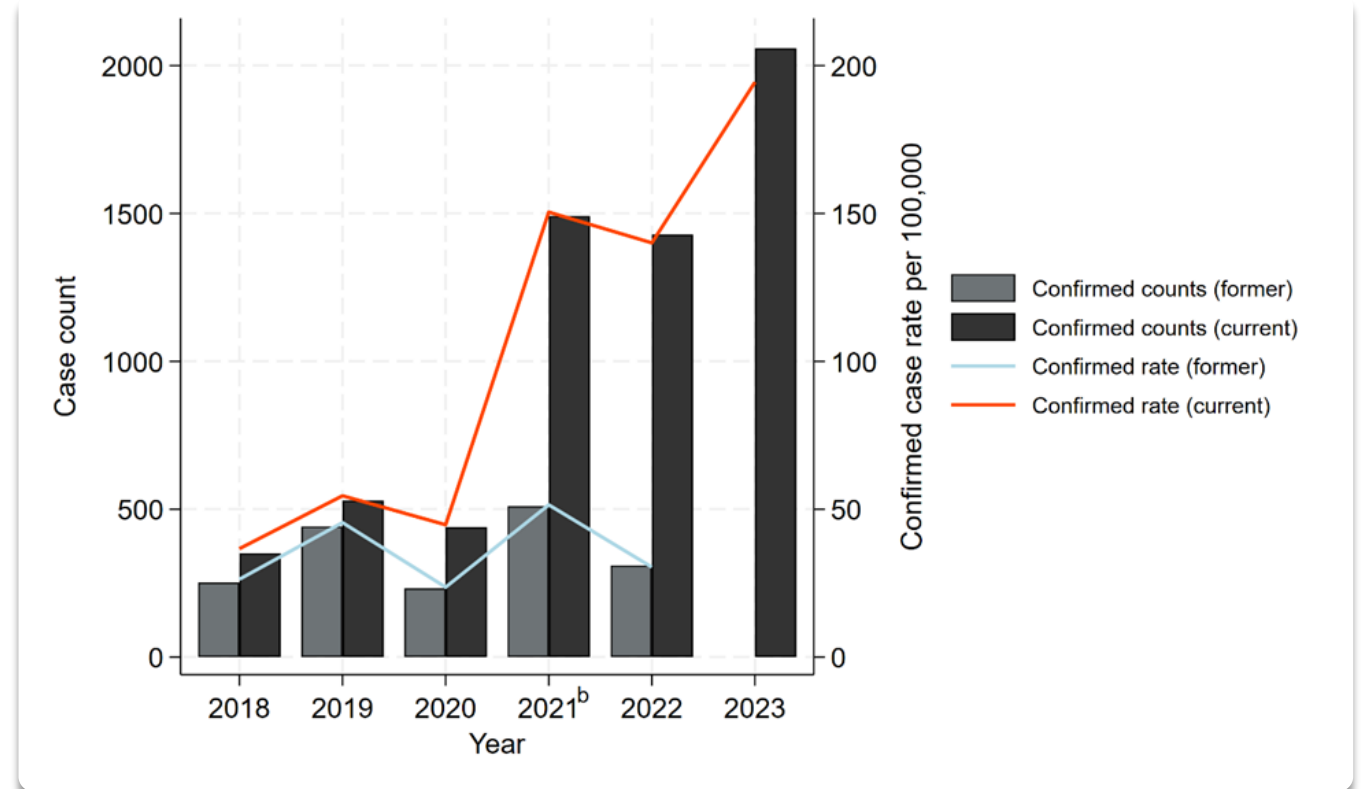


Innovation – Past and Future Projects

Innovation – Lyme disease

Lyme Disease

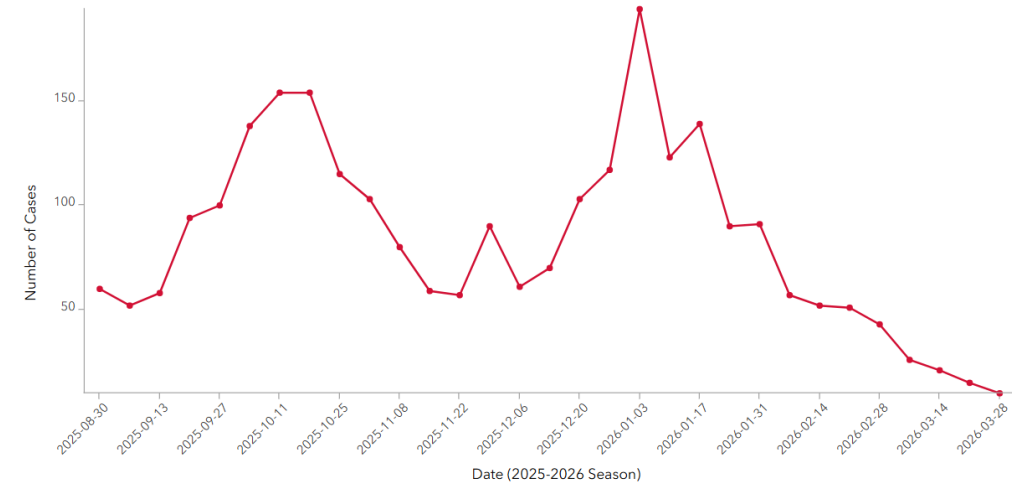
- ▶ An analysis of its impact on Lyme disease surveillance in Nova Scotia - Canada.ca
- ▶ Student project



Innovation – Wastewater and COVID-19



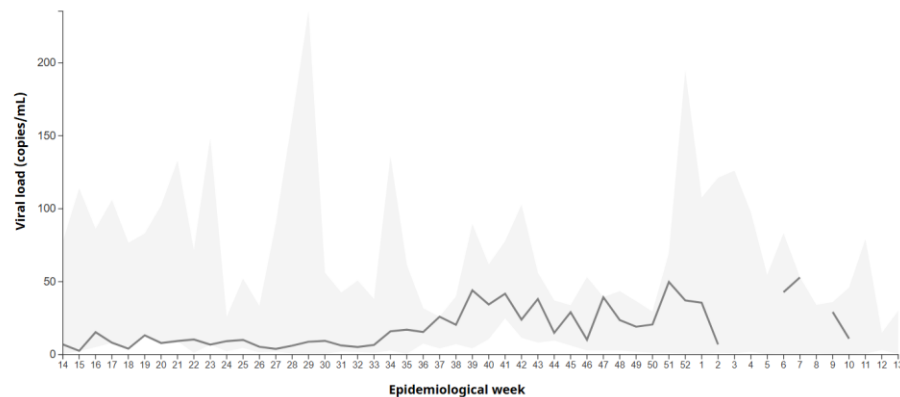
Laboratory Confirmed COVID-19 Cases by Surveillance Week, 2025-2026 Season Compared to Previous Seasons



<https://experience.arcgis.com/experience/5b5719930d584e87a0e9eb66b48752ce5/page/Home?draft=true&views=COVID-19-Cases%2CCases-%2CCurrent-Surveillance-Week>

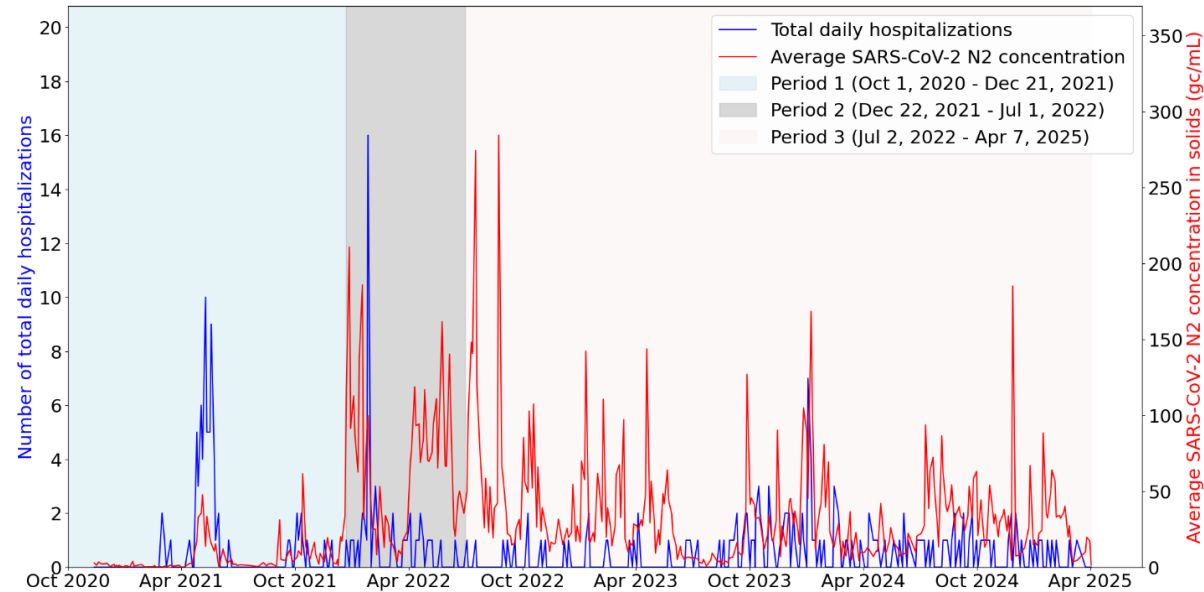
Nova Scotia

COVID-19 wastewater viral activity level is currently **Moderate** and the population coverage is 15.45%



<https://health-infobase.canada.ca/wastewater/variants.html>

Can Wastewater Predict COVID-19 Surges? A Descriptive Ecological Study Analyzing Correlation Across Three Wastewater Treatment Facilities in Halifax Regional Municipality



HRM: Halifax Regional Municipality | WWTF: Wastewater Treatment Facility

Total daily COVID-19 associated hospitalizations and average SARS-CoV-2 N2 concentration in three HRM WWTFs, October 1, 2020 to April 7, 2025

Health Equity: a Public Health Priority

- Prioritized as a cross-cutting PH Priority, both at DHW and at NSH
- Primary focus
 - Eligibility criteria revision for specific immunizations focusing on groups at higher-risk of vaccine-preventable diseases
 - Community consultation with 2SLGBTQIA+ organizations to revise criteria for Hep A, Hep B, HPV, and mpox vaccines
- Integrated as a consideration of other ongoing work
 - Health equity impact analysis as part of policy work
 - COVID-19 vaccine eligibility criteria consideration, developed in collaboration with First Nations Health Directors
- Often a specific interest for learners participating in PH Branch rotations
 - e.g., Katie Crespo and social deprivation index stratification of STBBI data

Discussion, Questions