Respiratory Response Plan for Public Health

2025–2026

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NOVA SCOTIA

Respiratory Response Plan for Public Health 2025-2026
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- Infection Prevention and Control, Nova Scotia Health
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- Provincial Public Health Laboratory Network of Nova Scotia
- Department of Natural Resources and Renewables
- Department of Agriculture

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1.0 Introduction

According to the World Health Organization (WHO), infectious diseases are emerging more quickly than ever, with the discovery of nearly 40 new diseases that were unknown a generation ago. The sudden emergence of an infectious respiratory pathogen can spread rapidly around the world. The COVID-19 pandemic was a reminder that events starting abroad can swiftly impact us in Canada. The threat of imported diseases has increased owing to several factors, including increased opportunities for disease emergence due to the effects of globalization; international spread through human and wildlife migration and travel; climate change; and health vulnerabilities related to an aging population.

Over the last twelve years the world has witnessed emergence of several respiratory pathogens; Avian Influenza A (H5N1), Middle East Respiratory Syndrome Coronavirus (MERS- CoV), and COVID-19 (SARS-CoV-2). The WHO and the Public Health Agency of Canada (PHAC) recommend increased vigilance and surveillance for severe acute respiratory illness (SARI).

This Respiratory Response Plan is intended to provide guidance to public health professionals to prepare for and respond to known and emerging respiratory pathogens with the potential to cause outbreaks and epidemics. This applies to emerging respiratory pathogen investigations where animal-to-human and human-to-human transmission are unknown and the risk to Nova Scotians is not clear.

The body of this document will provide context for how local, provincial and national, public health infrastructures can collaborate to prepare for and respond to respiratory pathogens. The appendices are included to ensure that public health professionals can easily access technical guidance for their approach and/or response. It will be reviewed and revised annually or as necessary based on evolving epidemiology.

2.0 Goals and Objectives

The goal of Nova Scotia's Respiratory Response Plan is to minimize severe illness and death from respiratory pathogens in Nova Scotia.

To achieve this goal, a set of objectives have been developed to provide tangible and strategic Public Health actions and interventions. These include:

Public Health Response

- Implementing public health measures that minimize severe illness, death and societal disruption from respiratory pathogens, with an emphasis on protecting those at higher risk and vulnerable populations.
- Minimizing the burden of illness through publicly funded vaccination programs for vaccine preventable respiratory pathogens.
- Ensuring public health practitioners have the knowledge, skills, and tools needed to adequately respond to known and emerging respiratory pathogens causing severe illness.
- Communicating with the public and health system using risk communication strategies and tools.
- Informing and supporting the health system respiratory response readiness (e.g., preparing for seasonal surges).

To learn more about Nova Scotia's respiratory surveillance goals and objectives for 2024-2025 see Respiratory Surveillance Plan.

Evaluation

Evaluation of these objectives is an essential step to support the effectiveness of public health interventions.

Guiding Principles

Nova Scotia's Respiratory Response Plan is grounded in ethical guiding principles that underpin public health decision-making. Ethical consideration is paramount when balancing the risk to the public from a communicable disease while respecting the rights of individuals. Public health decision making is complex, and the following list does not describe the entirety of public health ethics but rather defines a subset of key principles that should be considered as a starting point when making decisions about the control of a communicable disease.

- **Equity:** All people (individuals, groups, and communities) have a fair chance to reach their full health potential and are not disadvantaged by social, economic and environmental conditions.
- **Proportionality:** Any public health intervention should be proportionate to the threat faced, and that measures taken should not exceed those necessary to address the actual risk to the population. This includes demonstrating that the intervention should be effective in achieving the desired aim. In making judgements of proportionality, stronger actions require stronger evidence, and in the absence of evidence, interventions should include an evidence-gathering mechanism.
- **Least Restrictive Means:** Intrusion into people's lives should be the minimum possible, while the policy aim can still be achieved.
- **Reciprocity:** Every means possible should be sought to aid the individual in complying with the requests and impositions. In addition, complying with the public health program may impose sacrifices and burdens and, in whatever way possible, these should be compensated by the program or the agency.

3.0 Roles and Responsibilities

Roles and responsibilities may vary depending on local, provincial, or national involvement. While the Nova Scotia Respiratory Response Plan focuses specifically on communicable disease prevention and control related to respiratory pathogens and actions taken by the Department of Health and Wellness (DHW) Public Health Branch, Nova Scotia Health (NSH) Public Health, and the Provincial Public Health Laboratory Network (PPHLN) **it is acknowledged that there are additional partners who have important roles and responsibilities in the response to a respiratory event.** This includes partners inside the NSH and IWK health sector, non-health sector, private sector, municipalities, other provincial departments, and international organizations. Similarly, members of the public bear responsibility for keeping themselves informed and for adhering to measures that reduce the spread of illness.

3.1 World Health Organization

The WHO provides global guidance to Public Health Agency of Canada (PHAC) regarding known and emerging respiratory pathogens which may present as influenza-like illness (ILI) or SARI, including seasonal influenza and any respiratory pathogen with the potential to cause outbreaks and epidemics in a timely manner. WHO also advises on annual composition of influenza vaccines and COVID-19 vaccines.

3.2 Federal Government

Public Health Agency of Canada

Canada's response to emerging and re-emerging infectious diseases and respiratory pathogens is led by PHAC in collaboration with provinces and territories. PHAC is involved in the routine detection, monitoring and analysis of national and international trends and spread of infectious disease threats. PHAC is responsible for leading the development of national standards for detection and reporting of such infectious disease threats, including case definitions and protocols for reporting to allow Canada-wide comparison. PHAC is advised by the National Advisory Committee on Immunization (NACI).

National Advisory Committee on Immunization

NACI is a national advisory committee of experts in the fields of pediatrics, infectious diseases, immunology, pharmacy, nursing, epidemiology, pharmacoeconomics, social science and public health. NACI provides guidance on the use of vaccines approved for use in Canada. The Committee reports to the Vice-President of the Infectious Disease Prevention and Control Branch and works with staff from PHAC to provide ongoing and timely medical, scientific and public health advice on vaccines.

National Microbiology Lab

The National Microbiology Lab (NML) of PHAC works with public health partners both nationally and internationally to prevent spread of infectious diseases through research, laboratory-based surveillance, emergency preparedness and response, specialized services for detection and diagnosis, leadership, networking, and capacity development.

Health Canada

Health Canada (HC) regulates pharmaceuticals, vaccines, and other health products in Canada. In collaboration with PHAC, HC has a role managing events such as outbreaks involving First Nation and Inuit communities.

Canadian Food Inspection Agency

The Canadian Food Inspection Agency (CFIA), in collaboration and partnership with industry, consumers, and federal, provincial, and municipal organizations, works to protect Canadians from preventable health risks related to zoonotic diseases.

3.3 Nova Scotia Government

Department of Health and Wellness Public Health Branch

In consultation with various key partners, the DHW Public Health Branch (inclusive of Health Promotion, Health Protection, Strategic Initiatives, Public Health Emergency Preparedness, and Surveillance) develops the policies, standards, and protocols to guide the provincial public health response to known and emerging respiratory pathogens of interest and provides recommendations to the Chief Medical Officer of Health Team (CMOHT). The Public Health Branch systematically collects, analyzes, and reports on data for known and emerging respiratory pathogens. When a public health emergency exists and a threat to health is imminent, the Public Health Branch briefs and makes

recommendations to government based on a health risk assessment and in consultation with other Nova Scotia government departments, PHAC and relevant agencies. Public Health Branch Sub- Committees, co-led with Nova Scotia Health, ensure collaboration and communication across Nova Scotia's Public Health system. When strategic direction is required, the Public Health Steering Committee provides input and guidance.

Department of Natural Resources and Renewables

The Department of Natural Resources and Renewables (NRR) works with federal and provincial partners including the CFIA in the surveillance, management and response of respiratory pathogens involving wildlife.

Department of Agriculture

The Department of Agriculture (DAg) also works with federal and provincial industry partners including the CFIA in the surveillance, management and response of respiratory pathogens involving domestic and/or commercial animals.

3.4 Nova Scotia Health Public Health

Public Health

Provides investigation oversight to relevant situation(s) to take reasonable action to protect the public's health from viral respiratory pathogens (among other communicable diseases), including issuing public advisories and bulletins; conducting case and contact management; implementing proportional public health measures to prevent transmission (such as isolation or quarantine) and monitoring condition of a detained person, when applicable; implementing enhanced surveillance activities and taking such action as a Public Health Nurse (PHN) or the Regional Medical Officer of Health (RMOH) reasonably believes is necessary to prevent, control, or manage a public health threat.

Provincial Biological Depot

The Provincial Biological Depot manages the publicly funded vaccine supply, storage, and distribution to zonal public health offices and delivery to local providers.

The Provincial Biological Depot manages and investigates provider cold chain breaks. For additional information see BioDepot: Vaccine Ordering and Cold Chain Management.

3.5 Nova Scotia Health & IWK Health Authorities

Provincial Public Health Laboratory Network

PPHLN provides timely information and advice on specimen collection, shipping and obtaining results for laboratory investigations of known and emerging respiratory pathogens which may present as ILI or SARI, including seasonal influenza and any respiratory pathogen with the potential to cause outbreaks and epidemics.

Infectious Disease Expert Group

Infectious Disease Expert Group (IDEG) is an independent advisory committee that provides evidence-based advice on the prevention and control of communicable diseases to DHW Public Health.

Emerging Re-emerging Infections Network

Emerging Re-emerging Infections Network (ERIN) is a group of healthcare and research experts focused on strategic health system planning and preparatory response to potential mitigate impacts from emerging respiratory pathogens.

4.0 Key Components

This document outlines guidance for timely public health response to known and emerging respiratory pathogens with the potential to cause outbreaks and epidemics and provides greater detail on roles and responsibilities throughout.

Key components include:

- Immunization
- Risk Assessment
- Surveillance and Reporting
- Public Health Management of Respiratory Pathogens
- Outbreak Management

4.1 Immunization

Elements of a respiratory pathogen immunization program discussed in this section include:

- Objectives
- Vaccine Supply
- Vaccine Safety
- Coverage
- Communication Strategy

Objectives

The objectives of the Nova Scotia's immunization programs for vaccine-preventable respiratory diseases are to:

- Provide safe and effective vaccine to all Nova Scotians
- Decrease morbidity and mortality
- Allocate, distribute, and administer vaccine as rapidly and equitably as possible
- Monitor the safety and effectiveness of the vaccine program
- Limit societal disruption

Vaccines are the cornerstone of primary prevention and pandemic preparedness and response. Immunization of susceptible individuals can be effective at protecting against severe disease and death and in preventing transmission of respiratory pathogens.

DHW Public Health Branch provides guidance and communication regarding priority populations and eligibility for Nova Scotia's publicly funded routine and high-risk immunization programs for children, youth, and adults, including RSV, and an annual influenza immunization program and COVID-19 immunization program.

For more information, see:

Publicly Funded Vaccine/Immunoglobulin Eligibility Policy

Publicly Funded Vaccine Eligibility for Individuals at High Risk of Acquiring Vaccine Preventable Diseases

Publicly Funded Seasonal Inactivated Influenza Vaccine Information for Health Care

Nova Scotia Immunization Manual

Vaccine Supply, Storage, and Handling

Vaccines are procured at the federal level and the DHW Public Health Branch is responsible for forecasting and ordering of sufficient supply for Nova Scotians. Vaccines are delivered to the Nova Scotia Health Provincial Biological Depot and then distributed to providers. Accurate real-time knowledge of vaccine supply and inventory through Panorama allows for adjustments to vaccine shipments. The inventory system tracks vaccine lots to ensure timely identification of specific products that may be required to be held or recalled in the event of a potential vaccine safety issue.

Safe vaccine storage and handling, including cold chain maintenance is a shared responsibility from the time the vaccine is manufactured until it is administered.

For more detail regarding vaccine supply, storage, and handling see the Nova Scotia Immunization Manual or contact NSH Provincial Biological Depot, more information, see NSH BioDepot: Vaccine Ordering and Cold Chain Management. Protocols, including those in the Nova Scotia Immunization Manual and product-specific drug monographs, should be reviewed and followed.

Vaccine Safety: Adverse Events Following Immunization (AEFI)

All AEFIs not normally expected (i.e. listed in the product monograph) that are temporally related to administration of the vaccine need to be reported to local public health in accordance with It's the Law: Reporting of Adverse Events Following Immunization.

Immunization Coverage

Immunization coverage is an important health indicator to monitor population level protection against vaccine-preventable respiratory pathogens. Regular monitoring of immunization coverage contributes to the planning of public health interventions and programs (e.g., identifying populations most at risk and subsequent targeting of public health action), as well as the evaluation of immunization programs (e.g., achievement of coverage targets).

Information on immunization coverage reporting can be found in the Respiratory Surveillance Plan.

Immunization Entry and Electronic Records

Accurate and complete immunization data must be reported to Public Health to understand vaccine coverage; assess and improve the effectiveness of the public health program; and to inform vaccine inventory management.

Panorama is used as the province's immunization repository and its completeness relies on providers entering data for all immunizations correctly into the source platform (CANImmunize Clinic Flow, the Drug Information System (DIS)), direct entry into Panorama, Electronic Medical Records (EMRs)). Step-by-step instructions for entering influenza vaccines into QHR Accuro and Telus Med Access EMRs may be found on this resource page: EMR Immunization.

In order for Panorama to accept records from an EMR, the EMR must be configured exactly following the EMR Panorama Vaccine List. Note there may be up to a month delay in records entered in EMR to Panorama. Questions on EMR and Panorama interface can be emailed to: panorama@novascotia.ca

As of 2024, the public is able to access their own immunization records through Nova Scotia Government website and application, YourHealthNS.

Immunization Communication Strategy

Immunization communication strategy is jointly developed between DHW and Communications Nova Scotia, in collaboration with key partners including NSH and IWK.

The overall purpose of a given immunization awareness campaign is to:

- Clearly communicate vaccine eligibility and when and where the public can access vaccination.
- Encourage Nova Scotians to protect themselves and their loved ones by getting vaccinated.

- Educate the public and providers on what is known and unknown with regards to vaccine safety.
- Communicate the need to take protective measures in addition to immunization, as necessary.

This is achieved by:

- Providing Nova Scotians with consistent, current and reliable information about respiratory pathogens, prevention measures (e.g., hand hygiene, staying home when sick) and vaccines.
- Ensuring healthcare providers, the health system and public health have access to information about vaccines.

4.2 Risk Assessment and Risk Communication

Risk assessment is a systematic process for gathering, analyzing, and evaluating information to assign a level of public health risk. It provides the basis for taking action to manage and reduce the negative consequences of acute public health risks.

These assessments provide valuable input by identifying what is known about circulating respiratory pathogens at a point in time, allowing evidence- based predictions on what might occur and major areas of uncertainty.

Federal, provincial, and local Public Health are responsible for assessing risk to the public; although the approach, population, and focus area will differ.

PHAC is responsible for estimating and communicating the national risk and impact of public health threats from respiratory pathogens occurring locally and abroad to provinces and territories to support planning, actions, and decision making.

DHW Public Health is responsible for assessing the risk of a respiratory pathogen to Nova Scotians to prepare and plan public health interventions proportional to the situation, as well as consider potential impact on the health system and other government departments. Provincial risk assessment requires access to timely information, analyzed and presented in a useful manner. Epidemiological and laboratory surveillance data are key components of risk assessment that are produced to inform the response.

NSH Public Health is responsible for local and individual risk assessments of cases, contacts and outbreaks. NSH Public Health are experts in understanding how a public health threat may impact their communities, particularly those populations already experiencing inequities in health.

Assessment of risk may be based on:

- Pathogen characteristics
- Anticipated or experienced impact on the health care system and/or community
- Population immunity
- Age and other populations at risk of severe illness and death
- Severity of illness
- Antimicrobial resistance
- Estimated effectiveness of control measures
- Public health and health system preparedness
- Population willingness to adhere to public health measures
- Availability and efficacy of antimicrobials, treatments and vaccines
- Health system capacity

Risk Communication

Effectively communicating the public health risk associated with a known or emerging respiratory pathogen – particularly one of outbreak or epidemic potential -- to government and health system partners, as well as the public is an essential part of Nova Scotia's respiratory response. Public Health communication efforts and information dissemination must be well coordinated, timely, transparent, relevant, and empathetic to gain and maintain trust.

Public Health communication leads and strategies will vary based on assessed risk to Nova Scotians. DHW Public Health should lead risk communications in circumstances of novel or highly unusual respiratory pathogens of concern, while NSH Public Health should lead risk communications in circumstances concerning known respiratory pathogens.

Development of a communication strategy should include:

- Initial reporting and communication to Nova Scotia's Public Health officials and health system. See Figure 1: Procedure for reporting a suspected case of SARI or emerging respiratory pathogen in Nova Scotia.
- Identification of appropriate partners, such as those most affected by a public health response to a respiratory pathogen (e.g., acute and long-term care settings, other government departments) and any other key system leaders/champions.

- Development of key messages, including roles and responsibilities tailored for different partners. Note that different partners may have different information needs based on the potential impact of the public health response. Message delivery of the same facts may need to be adapted to audience.
- In collaboration with Communications, department leads create a public communication strategy including key messages specific for the public. Public communication should aim to ensure communities and individuals are made aware of the public health risk and the recommended personal and community-level prevention measures to make informed decisions.
- Key messages for partners and the public should be accurate and clear using plain language. Extra care should be taken to ensure messaging does not lead to stigmatization, discrimination or other disproportionate effects for more vulnerable groups. Consideration should also be given to a consistent, credible, and trusted spokesperson for sharing key messages as this can help with partner and public confidence and build credibility in government's response.

4.3 Surveillance and Reporting

Surveillance

Surveillance is the ongoing systematic collection, analysis, and interpretation of health data which informs the understanding of population health, disease trends and outbreaks. Surveillance makes it possible to not only identify threats to public health, but to respond quickly and develop evidence informed policies, programs and meet Canada's international public health obligations.

Nova Scotia's respiratory surveillance system involves collaboration with an extensive network of public health partners for ongoing surveillance of laboratory-confirmed influenza, ILI, COVID-19, and other respiratory pathogens such as respiratory syncytial virus (RSV). The provincial laboratories provide valuable expertise with respect to laboratory investigations for respiratory pathogens and are consulted annually, or more often if needed (e.g., potential emerging pathogen in Nova Scotia) regarding Nova Scotia's surveillance plan.

Nova Scotia's respiratory surveillance system also contributes to the national respiratory surveillance system which coordinates provincial/territorial data collection and dissemination of respiratory pathogen activity in Canada.

For further information on Nova Scotia's surveillance plan for respiratory pathogens, including types of data, data flow (within the province and to the national level), and outputs/reports produced see Respiratory Surveillance Plan for Nova Scotia.

To review public outputs produced as part of the respiratory surveillance system in Nova Scotia see Surveillance Reports.

Case Definitions

Case definitions are a set of standard criteria for classifying whether an individual has a particular disease and to ensure comparability for national surveillance purposes. They are intended to support public health activities rather than clinical diagnosis. Nova Scotia usually adopts national case definitions. Case definitions and reporting requirements for known respiratory pathogens can be found in the DHW Surveillance Guidelines.

Reporting

The Health Protection Act (HPA) provides the legal framework enabling public health officials to carry out disease control activities without unduly interfering with civil rights and liberties. The HPA requires specific diseases and conditions be reported according to the timeframes indicated in It's The Law.

Procedures for reporting ILI, laboratory confirmed influenza, COVID-19, and RSV can be found in Respiratory Surveillance Plan for Nova Scotia.

Procedures for reporting emerging respiratory pathogens and SARI can be found in Appendix C.

4.4 Public Health Management of Respiratory Pathogens

Public Health management of respiratory pathogens aims to prevent ongoing transmission of disease and to protect the health of populations and includes case and contact management and other community based public health measures. DHW sets the strategic policy guidance for public health measures and NSH PH is responsible for implementation.

Within hospital and acute care settings Infection Prevention and Control and Occupational Health are the responsibility of NSH and IWK Health authorities.

See Appendix A for Technical Information for SARI and Emerging Respiratory Pathogens and Appendix B for Public Health Management of SARI and Emerging Respiratory Pathogens.

Case and contact management guidance and technical information for other notifiable respiratory pathogens, such as COVID-19, avian influenza, and influenza, can be found in the Nova Scotia Communicable Disease Protection and Control Manual.

4.5 Outbreak Management

An outbreak is the occurrence of more cases of a specific disease than expected in a given area or among a specific group of persons during a specific period. Usually, the cases are presumed to have a common cause or to be related to one another in some way. Consultation with the RMOH may be needed to determine further public health management in the event of an outbreak (e.g., community- based control strategies such as closure of schools/gatherings).

Refer to the following documents for guidance related to outbreak management of respiratory pathogens, including influenza, ILI, COVID-19, emerging pathogens, and SARI

The purpose of outbreak management in specific high-risk settings is to minimize risk of pathogen-related harms while balancing disruptions to quality of life.

- Public Health Outbreak Response Plan
- Nova Scotia Surveillance Guidelines for Notifiable Diseases and Conditions
- Guidance Document for Respiratory Pathogens in Congregate Living Settings
- A Guide to Respiratory Virus Infections and Outbreak Management in Long-Term Care

For further information regarding outbreak reporting procedures, refer to Respiratory Surveillance Plan for Nova Scotia and Appendix C.

5.0 Conclusion

The Respiratory Response Plan does not cover all aspects of respiratory pathogens that have the potential to affect the public health system. It is a tool for public health professionals to use in respiratory pathogen response planning and preparation efforts to ensure a coordinated response to unknown and/or unexpected threats that may emerge. These efforts are a shared responsibility across the health system in Nova Scotia.

Appendix A: Technical Information for SARI and Emerging Respiratory Pathogens

Severe acute respiratory infection (SARI) refers to a clinical condition characterized by severe respiratory symptoms requiring critical care with no known etiology or diagnosis that reasonably explains the illness. Emerging respiratory pathogens refer to respiratory pathogens that have potential to cause serious public health impact, including the possibility of rapid spread around the world leading to a pandemic. Emerging pathogens may be caused by the emergence of new variants or antimicrobial resistance strains of known respiratory pathogens or the emergence of novel pathogens. Therefore, increased vigilance in the surveillance of SARI and other known emerging respiratory pathogens as listed below, is required to ensure a prompt response according to Nova Scotia's Respiratory Response Plan.

1. **Severe Acute Respiratory Infection (SARI)**
2. **Emerging Coronaviruses**
3. **Novel Influenza**

Please note the information in this Appendix is intended to assist public health professionals to manage a case of an emerging respiratory pathogen. It does not provide specific guidance to clinicians to diagnose an emerging respiratory pathogen, nor does it replace clinical judgement.

Refer to It's the Law for a full list of disease and conditions required by the Health Protection Act to be reported to Public Health.

Refer to Appendix D for 'Think Test Tell' information regarding what to do if a clinician suspects a case of an emerging pathogen.

For more information on emerging respiratory pathogens, please see the following:

Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector is a federal, provincial, and territorial (FPT) planning guidance document that outlines how jurisdictions work together to ensure a coordinated and consistent health-sector approach for influenza pandemic preparedness and response.

Public Health Agency of Canada: Emerging Respiratory Pathogens provides technical information on known emerging respiratory pathogens, such as coronaviruses, influenza A (pandemic influenza), avian influenza, as well as SARI.

The Centre for Immunization and Respiratory Infectious Diseases (CIRID) "Human Emerging Respiratory Pathogens (HERP) Bulletin" provides a monthly a situational analysis of emerging respiratory diseases affecting humans.

WHO's Disease Outbreak website for information on confirmed acute public health events or potential events of concern.

1. Severe Acute Respiratory Infection (SARI)

Case Definitions

The provincial surveillance case definition can be found here.

Causative Agent

Clinicians should maintain an awareness of known circulating respiratory pathogens, as well as novel respiratory pathogens circulating elsewhere in the world and consider pathogen- specific risk assessments for Canada. Recognition of a cluster or similar cases within a household or community is an important detail.

Symptoms

Symptoms of SARI may vary depending on etiological agent; however, are primarily defined by acute onset of respiratory symptoms such as:

- Fever (over 38°C). Fever may not be prominent in patients under age 5 years or age 65 years and older as well as in immunosuppressed individuals. Failure to clinically obtain temperature should not rule out a history of self-reported fever.
- New onset of (or exacerbation of chronic) cough or breathing difficulty.
- Evidence of severe illness progression, including clinical, radiological or histopathological evidence of pulmonary parenchymal disease (e.g., pneumonia, pneumonitis) typically associated with the need for hospitalization, intensive care unit monitoring and/or other severity markers (such as death).
- Acute Respiratory Distress Syndrome (ARDS) or severe ILI which may include complications such as encephalitis, myocarditis or other severe and life-threatening complications.

It is important to note that a spectrum of illness is recognized for most infectious diseases inclusive of mild or asymptomatic infection. Atypical presentations without any respiratory symptoms can occur with some emerging pathogens particularly when the individual has comorbidities, notably immunosuppression. Therefore, both clinicians and public health need to apply judgment when assessing patients with milder or atypical presentations, where, based on travel, contact, exposure settings, occupational risks (e.g., health care, laboratory, animals, or environmental), comorbidity or cluster history, the index of suspicion may be raised.

Diagnostic Testing

Refer to Appendix D for further information on diagnosis of emerging respiratory infections.

Treatment

Treatment is under the direction of the attending health care provider and is beyond the scope of public health.

2. Coronaviruses

Coronaviruses are a large family of viruses. They can cause diseases ranging from the common cold to severe acute respiratory syndrome.

2.1 Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Case Definition

The national surveillance case definition can be found here.

Causative Agent

MERS-CoV is an enveloped, single stranded, positive-strand RNA virus belonging to the family Coronaviridae.

Source

The origin of MERS-CoV is not well understood. Analysis suggests the virus originated in bats and was transmitted to camels at some point, but the reservoir remains unknown. Recent studies point to the role of dromedary camels as the primary source of MERS- CoV infection in humans through direct or indirect contact with infected camels or camel-related products (e.g., raw camel milk).

Incubation

The incubation period for MERS-CoV is still largely unknown but has been estimated to be 2–14 day (mean of approximately 5 days). Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) also demonstrated a prolonged incubation period range 2–10 days (mean of approximately 5 days;) compared to other human coronavirus infections (average 2 days; typical range 12 hours to 5 days).

To allow for inherent variability, recall error and to establish consistency with other emerging respiratory virus monitoring, exposure history based on the prior 14 days is a reasonable and safe approximation.

Transmission

MERS-CoV in humans has been linked to dromedary camels. The pattern of disease suggests that the virus can also spread between humans. Person-to-person transmission has been reported among close contacts in health care, workplace and household settings; however, there has been no sustained person-to-person transmission and the risk of contracting this infection is still considered to be low. Outbreaks of MERS-CoV have mainly resulted from nosocomial transmission in healthcare facilities. Outside the health care setting, there has been no sustained human-to-human transmission documented anywhere in the world.

Communicability

The period of communicability for MERS-CoV is unknown at this time.

Symptoms

MERS-CoV infections are wide ranging from showing no symptoms (asymptomatic) or mild respiratory symptoms to severe acute respiratory disease and death. A typical presentation of MERS-CoV involves fever, cough, and shortness of breath. Progression to severe pneumonia, ARDS and respiratory failure can also occur. Gastrointestinal symptoms such as vomiting, and diarrhea have also been reported.

Those who are immunocompromised, have chronic health conditions, or are older are believed to be at higher risk of severe disease.

Diagnostic Testing

Clinician and public health judgment should be used in assessing patients with milder or atypical presentations, where the index of suspicion may be raised because of contact, comorbidity or cluster history. Clinician discretion, epidemiologic context and local feasibility should be considered in discussions with local/provincial health authorities.

Refer to Appendix D for further information on diagnosis of emerging respiratory pathogens.

Treatment

Treatment is under the direction of the attending health care provider and is beyond the scope of public health.

Additional Resources

- For health professionals: Middle East respiratory syndrome (MERS)
- Public Health management of human illness associated with Middle East Respiratory Syndrome Coronavirus (MERS-CoV): Interim guidance for containment when imported cases are suspected/confirmed in Canada

- Infection Prevention and Control Guidance for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in Acute Care Settings
- Summary of Assessment of Public Health Risk to Canada Associated with Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

2.2 Severe Acute Respiratory Syndrome (SARS)

Case Definition

The provincial case definition can be found here.

Causative agent

SARS-CoV is an enveloped, single stranded, positive-strand RNA virus belonging to the family Coronaviridae.

Source

SARS was first identified in February 2003 during a global outbreak involving four countries, including Canada. The reservoir is thought to be in cave dwelling Chinese horseshoe bats, however, there is still a great deal about SARS that remains unknown.

Incubation

Incubation period of SARS ranges from 2 to 14 days (mean 4.6 days).

To allow for inherent variability, recall error and to establish consistency with other emerging respiratory virus monitoring, exposure history based on the prior 14 days is a reasonable and safe approximation.

Transmission

SARS is understood to be readily transmitted person-to-person through small respiratory droplets produced from a cough or sneeze of an infected individual. These droplets are propelled through the air and may be spread directly to others nearby by entering the mouth, nose, or eyes. The virus is also spread indirectly by others touching surfaces contaminated with droplets and then touching their mouth, nose or eyes. It is unknown at this time whether the SARs virus is spread more broadly via airborne transmission.During the 2003 outbreak, cases in Canada were traced to initial cases who had traveled to Hong Kong and returned to Canada with subsequent transmission to close contacts, including health care workers.

Communicability

The period of communicability for SARS is unknown at this time.

Symptoms

Initial onset is typically marked by high fever (>38 degrees C), and may be accompanied by chills, headache, malaise, muscle pain, and respiratory symptoms. Symptoms may progress to cough (dry, non-productive), dyspnea, and at times hypoxemia around 3–7 days following onset. 10–30% of cases may suffer from more severe symptoms requiring mechanical ventilation. Case fatality has been reported around 11%.

Diagnostic testing

Symptoms of SARS are similar to those of other respiratory infections. SARs cannot be diagnosed on symptoms alone. Refer to Appendix D for further information on diagnosis of emerging respiratory infections.

Treatment

Treatment is under the direction of the attending health care provider and is beyond the scope of public health.

3. Novel Influenza

Novel influenza strains in humans may evolve from animal populations such as birds (avian influenza) or variant influenza viruses of swine. Novel influenza strains are significant because there is little to no natural immunity and therefore there is increased risk of a pathogen of pandemic potential.

Avian Influenza

For more information on avian influenza see (Nova Scotia Avian Influenza).

Variant Influenza Viruses of Swine

Influenza A viruses that circulate in swine (pigs) and have infected humans are referred to as variant viruses and denoted with a letter “v”. H1N1v, H1N2v, and H3N2v are influenza A variant viruses that have been found in humans; however, cases in humans are rare and recent evidence indicates no sustained human to human spread has occurred.

3.1 Influenza A H3N2v

Case Definition

There are currently no federal or provincial case definitions specific to any variant influenza viruses of swine.Causative Agent

Causative agent

Influenza A virus

Source

Swine influenza viruses are endemic in pigs.

Incubation

An incubation period of two to three days has been reported but estimated up to seven days.

Transmission

Most human infections have occurred following close proximity to infected pigs or their environment. However, some human-to-human transmission has occurred, such as during the outbreak of influenza A (H3N2v) in the USA in 2012. It is believed that H3N2v and other influenza A variants of swine origin are transmitted through direct and indirect contact with infected respiratory droplets (of a pig or huma), similar to seasonal influenza.

Communicability

Limited human-to-human spread of this virus has been detected in the past but no sustained or community spread of H3N2v has been identified.

Symptoms

Clinical characteristics of human influenza A H3N2v are similar to symptoms of uncomplicated seasonal influenza, including chills, cough, and headache followed by fever, pharyngitis, rhinitis, myalgia, fatigue, loss of appetite, throat irritation and headache. Vomiting and diarrhea may also occur, particularly among infections in children. The duration of illness also appears to be similar to uncomplicated seasonal influenza; approximately 3 to 5 days and up to 10 days. Severe and fatal illness has been reported. The same people at risk for complications of seasonal influenza are also likely at higher risk of complications (e.g., young children, pregnant people, people age 65 years and older, immunocompromised).

Diagnostic Testing

Refer to Appendix D for further information on diagnosis of emerging respiratory infections.

Treatment

Treatment is under the direction of the attending health care provider and is beyond the scope of this plan. Consult an Infectious Disease specialist for current treatment details.

Additional Resources

- Human influenza A with swine origin

Appendix B: Public Health Management of Emerging Respiratory Pathogens and SARI

This section contains the following information for public health management of emerging respiratory pathogens (suspect, probable or confirmed) and SARI:

1. **Case Management**
    - Investigation
    - Education
    - Case Exclusion and Isolation
2. **Contact Management**
3. **Travel and Border Related Issues**

1. Case Management

1.1 Investigation

The extent of an investigation should be guided by laboratory confirmation; however, because collection, shipment, and testing of specimens often require several days or longer, an investigation may need to begin before laboratory test results are available. If laboratory confirmation is **not** possible, an investigation should still be launched.

Upon notification of a suspect, probable or confirmed emerging respiratory pathogen or suspected or confirmed SARI case, **public health should:**

- Review the clinical status; review the radiological, laboratory findings and travel/ occupational exposures.
- Ensure consultation with an infectious disease physician for clinical management and medical microbiologist regarding the laboratory protocol.
- Interview the case and/or guardian/proxy within the first 24 to 48 hours of the investigation to collect basic demographic, clinical, and epidemiological information. Essential basic information may include:
    - Outbreak or cluster related
    - Sex
    - Age

    - Date of onset
    - Symptoms
    - Whether hospitalized/Date of hospitalization
    - Whether in ICU/Date of ICU admission
    - If deceased/Date of death
    - Lab-date of sample collection, test method and result (when available)
    - Travel history
    - Vaccine history
    - Other possible exposures or risk factors (e.g., ill contact, animal, food)
- Notify DHW CMOH Team
- Ensure completion and immediate reporting of Emerging respiratory pathogens and SARI case report form to DHW surveillance team
    - It is not expected that all fields will be initially completed, but as updates are available, form will be updated.
    - DHW will review the case report and forward to PHAC (excluding identifiers).
    - See Figure 1 **for further information on reporting emerging respiratory pathogens/SARI cases and provincial communication channels**.
- Initiate mandatory active daily monitoring of case's individual health status and continue for the duration of illness, or until a probable case no longer meets the case definition (e.g., due to further testing results or symptoms are resolved).
    - If case is hospitalized, liaise with hospital staff to complete active daily monitoring.
- Identify close contacts (defined and detailed below).
- Outside the scope of Public Health; the clinical management of emerging respiratory pathogen or SARI cases should be under the direction of the attending health care provider and guided by the identified pathogen.

1.2 Education

Public Health should provide information regarding:

- Managing symptoms at home
- When and where to seek medical advice or assessment and to report relevant diagnosis, travel or contact history immediately upon presenting to a health care setting.
    - Maintain good respiratory etiquette and hand hygiene practices
    - Wear a well-fitting medical mask around others
    - Infection, prevention and control measures (e.g., disinfecting high touch surfaces in the home)

1.3 Case Exclusion and Isolation

Case exclusion and/or isolation requirements may be determined in consultation with RMOH based on the threat to public health.

In general, the case should be advised to avoid close contact with others in their household, as well as stay away from work, school, daycares, and other vulnerable populations (e.g., those who are immunocompromised, pregnant persons, persons age 65 years or older) until symptoms are improving, they are able to fully participate in their usual day-to-day activities, and/or Public Health has deemed them recovered.

In circumstances where the case is hospitalized or resides in a long-term care facility (LTCF), Infection prevention and control (IPAC) specialists should be consulted by NSH Public Health. In acute care settings, IPAC most often will oversee case isolation and other IPAC measures within the facility while in LTCF, NSH Public Health may take on a more collaborative role.

When health care is provided in home settings, routine IPAC practices are required, and additional precautions may be applied specific to the setting and local epidemiology according to organizational policies and guidance of NSH IPAC where needed. Care of an individual with a respiratory pathogen should be performed in a location with spatial separation from others in the home, preferably in a well-ventilated (e.g., open window) room of their own. If a separate room is not feasible, a two-metre distance should be established in a shared room whenever possible. Aerosol generating medical procedures should not be carried out in the home setting unless medically necessary and a plan is developed in accordance with organization policies and following consultation with NSH IPAC as required.

Those who work in high-risk settings, such as health care settings, long term care facilities or congregate living settings, should consult their occupational health safety and wellness (OHSW) guidelines and manager to determine if additional exclusion is necessary and length of exclusion.

Discuss and identify any barriers to exclusion or isolation. Support may be needed to decrease any undue burden and aid the case in effectively following Public Health requirements.

For situations that are not clear, consult with the RMOH to determine on a case-by-case basis, what further public health measures and/or follow-up may be required.

2. Contact Management

Contact management of cases of SARI or emerging respiratory pathogens assists public health:

- To better understand the epidemiology of these pathogens during the period where questions remain about issues such as person-to-person transmission and the reservoir for infection
- With the rapid identification of symptomatic contacts to reduce the opportunity of transmission to others
- To review what is known about emerging respiratory pathogens and their associated illness with contacts

Close Contact: typically, a person exposed to a case during the infectious period within 2 meters, for at least 15 minutes with insufficient PPE, or as otherwise determined in consultation with Public Health.

Contact management and preventative measures will be determined in consultation with RMOH based on the threat of the identified or suspected pathogen to the public's health, current and/or known epidemiology of the pathogen, as well as the objective (e.g. to stop versus limit spread). Assessment and evaluation for antiviral prophylaxis or immunoprophylaxis may be completed on case-by-case basis and in consultation with RMOH and ID specialists.

In general, contact management of cases of SARI or emerging respiratory pathogens involves active daily monitoring by public health staff for the duration of the incubation period or 14 days if the pathogen is unknown. In circumstances where the index case no longer meets a case definition (e.g., testing results rule out emerging respiratory pathogen), consult with RMOH to determine need for continued monitoring. If contact(s) is hospitalized, liaise with hospital staff for daily monitoring.

For the duration the incubation period, contacts should be advised to:

- Self-monitor for fever and new onset of symptoms of ILI. Consider staying in an area where health care is readily accessible, if possible.
- Maintain good respiratory etiquette and hand hygiene practices.
- Wear a well-fitting medical mask around others particularly in indoor public places.
- If sharing living arrangements with a case avoid close contact as much as possible and follow relevant advice provided under case management section.
- Should symptoms develop, isolate as quickly as possible and contact local public health for further direction.
- Follow all other recommended Public Health measures including testing, exclusions, or self-isolation.

Additional contact management measures (e.g., quarantine, aircraft related travel contact tracing procedures) may be required as requested by the RMOH.

3. Travel and Border Related Issues

PHAC's Office of Border Health Services will be involved in the reporting and case management of arriving or departing international passengers at the port of entry who may be persons under investigation (PUI); with the federal Quarantine Officer notifying local public health authorities should such situations arise. Quarantine officers have no authority over domestic flights.

Agency Environmental Health Officers will provide information to the operator regarding the cleaning of the conveyance. The Office of Border Health Services at PHAC may be of assistance with requesting passenger manifests from conveyance operators, when requested to do so by a local public health authority or provincial public health office.

To contact a Quarantine Officer, Environmental Health Officer, or manager at PHAC call the Central Notification System at 1-833-615-2384. This line is answered 24h/7. For non-urgent inquiries, emai cns-snc@phac-aspc.gc.ca.

Visit PHAC's website at the following link: https://www.canada.ca/en/public-health/services/ emerging-respiratory-pathogens.html to receive updates as new details become available regarding public health management of emerging respiratory pathogens.

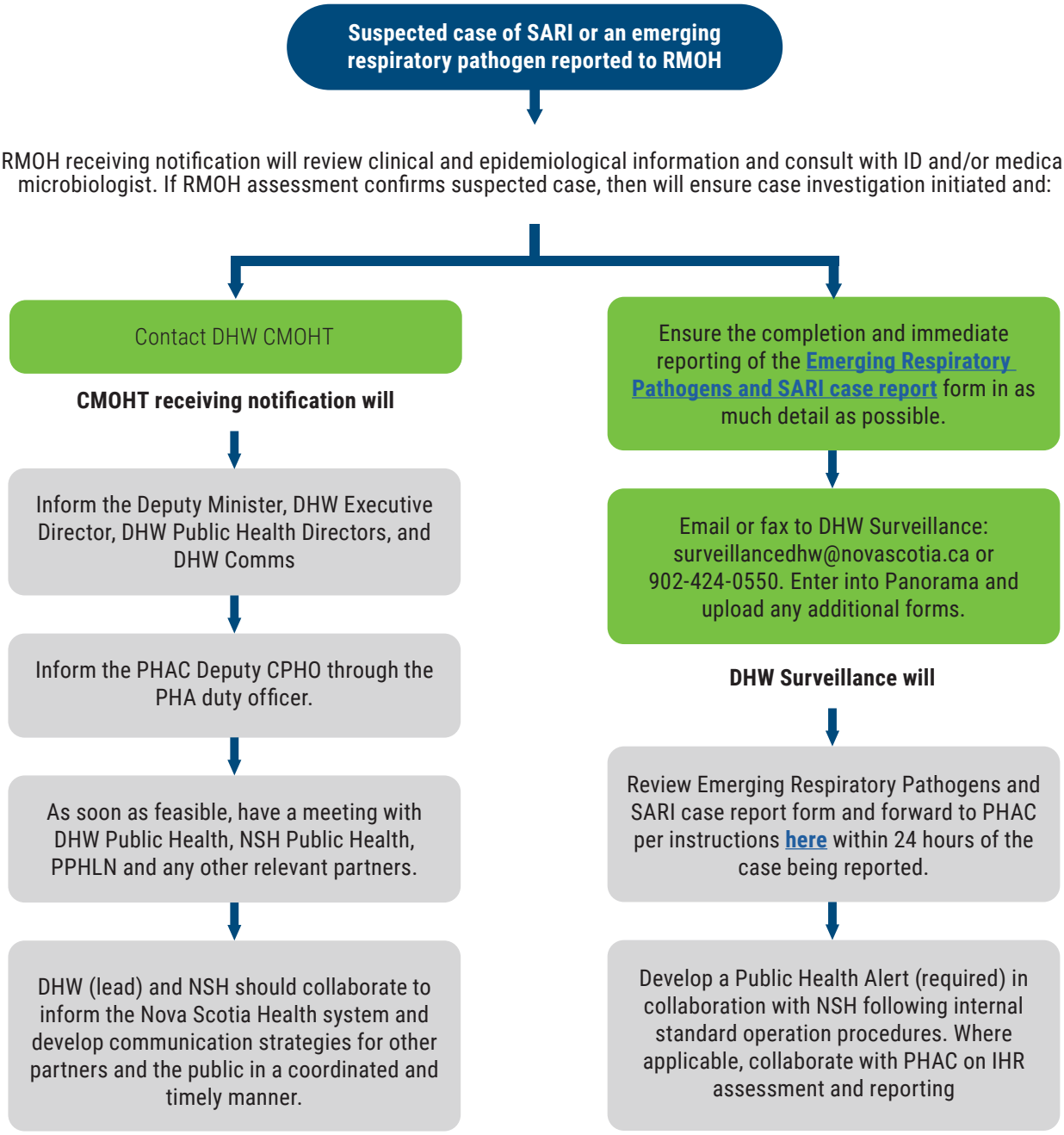
Appendix C: Reporting Emerging Respiratory Pathogens and SARI

To ensure rapid alerting of senior Public Health officials and consistent and immediate public messaging, the following steps detailed in Figure 1 Procedure for reporting a suspected case of SARI or emerging respiratory pathogen in Nova Scotia need to be taken. Please refer to Appendix B for information pertaining to Public Health case management.

For suspected cases of SARI and emerging respiratory pathogen cases, a **Canadian Network for Public Health Intelligence (CNPHI) Public Health Alert (PHA)** is required to alert public health partners. PHA are an application on CNPHI that allows for the timely notification and/or dissemination of information between local/regional, provincial, territorial, and national public health partners. Please note that Public Health may consider the use of a PHA to notify other jurisdictions of certain outbreaks or unusual events outside of SARI or emerging pathogens (note that the definition of unusual is subjective and may require a certain level of public health professional discretion). For details on PHAs see Public Health Alerts Quick Reference for Postings.

Under the International Health Regulations (IHR), a notification to PHAC by DHW Surveillance is also required in cases of human influenza A virus caused by a new subtype and in cases of severe acute respiratory syndrome (SARS). Other events meeting specific IHR criteria constituting a public health emergency of international concern must also be reported, i.e., public impact is serious, event is unusual or unexpected, there is significant risk of international spread, and/or there is significant risk of international trade or travel restrictions. For further information on assessment and reporting public health emergencies of international concern see Canada and the International Health Regulations: Assessment and Reporting.

Figure 1: Procedure for reporting a suspected case of SARI or emerging respiratory pathogen in Nova Scotia



Appendix D: Laboratory Procedures

This appendix includes:

1. **Laboratory Procedures for Known Respiratory Pathogens**
2. **Laboratory Procedures for Emerging Respiratory Pathogens and SARI**

1. Laboratory Procedures for Known Respiratory Pathogens

Respiratory pathogen testing is available in acute care setting (including inpatients and emergency department patients), long-term care facilities, and for approved community specimens with testing for SARS-CoV2 and Influenza A/B or SARS-CoV2, influenza A/B and RSV. Please refer to Respiratory Surveillance Plan for Nova Scotia for Nova Scotia's Respiratory Testing Algorithm.

Expanded respiratory testing (e.g., rhinovirus, adenovirus, human metapneumovirus, pertussis) may only be performed in specimens submitted from the ICU or immunocompromised individuals but can be requested on limited basis such during outbreaks (as directed by Public Health or IPAC), otherwise consultation with a microbiologist or RMOH is required.

For further information on diagnostic testing for Influenza or COVID-19

- Respiratory Surveillance Plan for Public Health
- Influenza CD Manual Chapter
- COVID-19 CD Manual Chapter
- Avian Influenza CD Manual Chapter
- A CD Manual Chapter for Respiratory Syncytial Virus (RSV) will be forthcoming in the DHW Communicable Disease Prevention and Control Manual.

1.2 Specimen Collection

Diagnosis of respiratory pathogens depends on the collection of high-quality specimens, their rapid transport to the lab and appropriate storage. For specific laboratory requirements see the Provincial Microbiology Users Manual and applicable NSH, IWK Health or LTCF policies and protocols. If more information is required, consult with local Public Health, RMOH, or microbiologist on-call.

1.3 Laboratory Testing

Laboratory testing services for respiratory pathogens are available at NSH local/regional hospital laboratories and the IWK Health laboratory. Testing frequency (weekday/ weekend) is assessed on an ongoing basis by the testing facilities. Please note that the turn-around time for results may be further impacted by transportation from zonal/ regional labs to the testing facility(s).

Public health surveillance subtyping of influenza virus type A and COVID-19 positive samples may occur at the PPHLN Anchor Laboratory at the QEII and/or NML in consultation with the PPHLN. Testing during a SARI case investigation will be prioritized. See Respiratory Surveillance Plan for Nova Scotia for further details on criteria for subtyping.

There are multiple streams of laboratory surveillance available in Nova Scotia, including virological surveillance of influenza, COVID-19 and novel pathogens. To learn more see Respiratory Surveillance Plan.

1.4 Point of Care Testing (POCT)

POCT is defined as a medical diagnostic or screening test that is performed outside the clinical laboratory, often in a community setting, where the results are rapidly available. Currently the only respiratory virus POCT testing in use are those used to detect SARS CoV-2. These can be either rapid antigen detection tests (RADTs) or molecular based methods. These tests are predominantly used in community settings and designed to be self-administered.

For more information about POCT for SARS-Cov-2, see COVID-19 CD Manual Chapter.

1.5 Result Inquiry

- Turnaround time for results from the laboratory may be up to 48 hours unless impacted by a surge in respiratory testing
- Result inquiries can be directed to your local/regional lab

1.6 After Hours Consultation

The Microbiologist on call is accessible through QEII Locating at **902-473-2222**.

2. Lab Procedures for Emerging Respiratory Pathogens and SARI

The lab procedures for detecting emerging respiratory pathogens and SARI in this plan have been adapted from the Protocol for Microbiological Investigations of SARI. This protocol is intended to facilitate the diagnosis of severe respiratory infections due to both unknown and known respiratory pathogens that have the potential for large scale epidemics.

A key factor in diagnosing emerging respiratory pathogens, such as MERS-COV, H7N9, H5N1, etc., is the determination of risk based on epidemiologic factors. If an initial assessment indicates there is a potential risk for an emerging respiratory pathogen or SARI, clinicians must **"Think, Tell and Test"** (See Figure 2):

- **Think** about the possibility of an emerging respiratory infection (e.g., novel influenza A virus)
- **Tell** the local medical officer of health or local public health official (after hours 902-473-2222)
- **Test** for pathogen only after appropriate consultation and based on clinical symptoms (contact the Medical Microbiologist through QEII Switchboard 902-473-2222)

When coordinating specimen submission with a clinician ensure "suspect X" is clearly identified on the specimen requisition as well as identifying the RMOH involved and the relevant exposure. This will ensure the laboratory is aware that Public Health is involved and aware of the situation. When a sample is being submitted, the local laboratory should be advised that the sample is being submitted and needs to be referred to Central Zone. Notification using the CZMicrobiologist@nshealth.ca email is the most efficient way.

2.1 Laboratory Protocol

In patients with no epidemiological risk factors, the most common pathogens should be ruled out before considering an unusual or more highly virulent pathogen. This may be done at the local laboratory or the PPHLN depending on local capacity and expertise. For more information refer to the Respiratory Surveillance Plan for Nova Scotia.

Specimens to be considered for collection include a nasopharyngeal swab (NPS) (preferred specimen), throat swab, nasopharyngeal aspirate (NPA), bronchoalveolar lavage (BAL), endotracheal secretions, and sputum. For pediatric patients, a nasopharyngeal aspirate is a suitable replacement to an NPS.

For those indicated (i.e., ICU patient, immune compromised, or related to an outbreak investigation and requested by MOH or IPAC), pathogens that should be considered and

are included in expanded respiratory multiplex testing (which exception of Legionella) include:

Conventional bacteria (including Mycoplasma pneumoniae, Legionella pneumophila, Bordetella pertussis)

- Specimen: Throat swab, NPS, NPA, sputum and urine
- Testing: gram stain and routine culture + Legionella.
- Mycoplasma pneumoniae PCR,
- Bordetella pertussis PCR
- Legionella urinary antigen

Conventional respiratory viruses (including human influenza A/B, SARS-CoV2, parainfluenza, RSV, adenovirus, human metapneumovirus, rhinovirus/enterovirus, coronavirus)

- Specimens: NPS, endotracheal secretions, BAL, +/- throat swab and sputum.
    - NPS is the primary specimen type for respiratory viruses including seasonal influenza. However, deeper specimens such as endotracheal secretions or BAL must be collected in cases of severe respiratory infection with negative NPS.
    - A number of avian Influenza A viruses, including H7N9, have been detected in throat swabs. Recently, H7N9 was only detectable in sputum specimen in one of four patients. While sputum and throat swabs are not ideal for most influenza viruses, until the ideal specimen for avian influenza A viruses like H5Nx and H7N9 can be identified, multiple specimen types should be considered in patients suspected of having avian Influenza A viruses.
- Testing:
    - For additional information refer to the PPHLN Respiratory Season Testing Algorithm at Respiratory Surveillance Plan for Nova Scotia.
    - RADTs should not be used to rule out influenza A. The sensitivity of currently available RADT for human and avian influenza strains is suboptimal. The performance characteristics of currently available commercial tests for detection of swine variants are unknown and likely to be poor based on the suboptimal sensitivity of these assays for other Influenza strain.

- If more invasive samples are collected, they should be processed for a wide range of pathogens:
    - Bronchial-alveolar wash for all cultures (bacteria, viruses, mycobacteria, fungi)
    - Open lung biopsy — for all cultures, RT-PCR and histology (ensure specimen is not put in formalin for microbiology testing.)

2.2 When to suspect the novel coronavirus (MERS-CoV):

Limited data suggests that MERS-CoV can present as a co-infection with other viral pathogens.

As such, in addition to specimens that are negative for conventional pathogens, those that do have other identified pathogen **but are consistent with suspect cases of novel coronavirus based on the PHAC case definition** should be tested for MERS-CoV.

The details regarding testing and some control materials for method development are available from the NML. To date only a few PPHLs have developed the capacity to test for this pathogen in-house. All other PPHLs will forward the suspect specimens to the NML for further testing.

2.3 When to suspect a novel influenza virus (including avian and swine variants):

Influenza positive specimens outside the influenza season or obtained from patients with a history of exposure to animals (e.g., pigs, chickens, cows), should be identified so that they can be submitted to the NML for characterization. Routine laboratory testing for Influenza A in NS can detect avian influenza however, subtyping is needed to differentiate seasonal from avian influenza. NS will rely on the NML for further characterization of all suspect avian strains, as well as novel or non-typeable samples. However, given that subtyping assays are usually less sensitive than the identification assays, weak positives may not be able to be typed.

NOTE: While initial analysis of in-house assays used by many labs suggest they should be effective in identifying avian and swine variants, it is difficult to determine the effect on the sensitivity of testing. This is particularly true of the performance of commercial assays whose primer sequences are not known.

2.4 If a front-line laboratory suspects a novel respiratory pathogen:

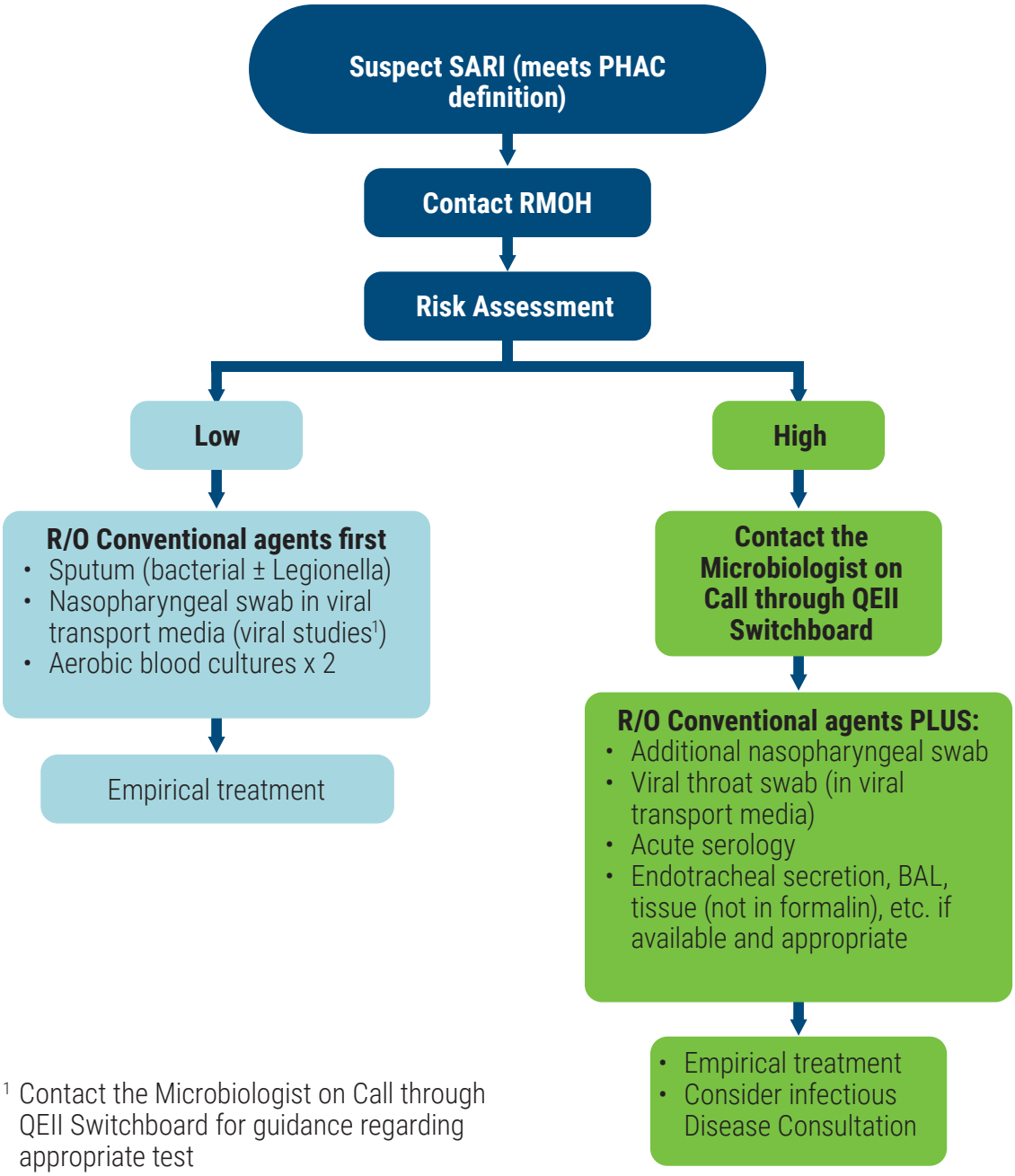
The initial tests (as outlined above) would be similar but supplemental testing will be required at the anchor laboratories of PPHLN. If the laboratory is informed by a Public Health representative in the NSH or a clinician, that a novel respiratory pathogen is suspected, the laboratory should communicate with the clinician to ensure that the following specimens are collected:

- A second NPS/endotracheal aspirate or BAL to be used for confirmation by the NML
- A viral throat swab (in viral transport media) — Several avian Influenza A viruses including the H7N9 have been detected in throat swabs. Until the ideal specimen can be collected multiple specimen types should be considered
- Acute and convalescent sera
- Conjunctival swab if clinically appropriate (in viral transport media)

2.5 If a PPHLN laboratory suspects a novel respiratory pathogen:

- The laboratory director will notify the RMOH immediately when a suspect specimen is identified
- All specimens with suspected novel respiratory pathogens will be forwarded to the NML for confirmatory testing
- The laboratory and/or Public Health should also communicate with the PPHLN that a suspect novel respiratory pathogen sample is being transported.

Figure 2: Laboratory Testing for SARI



[1] Contact the Microbiologist on Call through QEII Switchboard for guidance regarding appropriate test

2.6 Transportation of Specimens

If a case has been linked to another proven case of a novel respiratory virus, or has strong epidemiological evidence to link it with avian influenza or other emerging pathogens like coronaviruses, then the specimen must be handled following Transportation of Dangerous Goods (TDG) Regulations.

For awareness purposes only:

Transport by Land:

If the suspected agent is classified as Risk Group 3, use a Type 1A package. (There is a modification possible for transport by air, see below.)

Other requirements of the Transportation of Dangerous Goods (TDG) regulations such as training, labeling, marking and documentation apply.

Transport by Aircraft:

The International Civil Aviation Organization (ICAO) Technical Instructions (TI) with some additional provisions of the TDG Regulations may be used for the transportation of diagnostic specimens by aircraft. Consignments prepared this way may be transported by road to and from the airport as well.

Under the ICAO TI, the shipping name DIAGNOSTIC SPECIMEN, UN3373 must be used for all diagnostic specimens if they may contain influenza Risk Group 3 agent. Diagnostic specimens are exempt from other requirements in the ICAO technical instructions if they are packaged in packaging of good quality, capable of passing a 1.2m drop test.

A Type 1A package meets these requirements. A Type 1B package may only be used if it meets the additional ICAO requirements regarding cushioning of the secondary receptacle, drop test and pressure retention capability.

NOTE: Applicable temporary certificates may be used instead of the general guidelines provided. Temporary certificates can be searched and found here: Approvals - Search by Certificate Number (tc.gc.ca)

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