

Respiratory Disease Outbreak

Investigative Guidelines

October 2023

1. DISEASE REPORTING

1.1 Purpose of Reporting, Surveillance, and Investigation

1. To detect respiratory disease outbreaks of reportable pathogens in all settings.
2. To detect and investigate respiratory disease outbreaks of non-reportable pathogens in high-consequence congregate settings and non-congregate healthcare settings.
3. To provide public health guidance regarding control measures (e.g., prophylaxis, immunization, masking, ventilation, isolation) that reduce transmission and the risk of severe outcomes.
4. To characterize the epidemiology of respiratory disease outbreaks.

1.2 Laboratory and Physician Reporting Requirements

Healthcare providers and long-term care facilities are legally obligated under Oregon Administrative Rule 333-018-0015 to report immediately, day or night, respiratory (and other) outbreaks, and any uncommon illness of potential public health significance. Reports are made to the local public health authority (LPHA) or to the Oregon Health Authority (OHA) epi on call (971-673-1111).

Licensed laboratories are required to report results indicative of reportable conditions, many of which may cause respiratory outbreaks.

1.3 Local Public Health Authority Responsibilities

1. Educate and consult with local medical providers and facilities to promote compliance with respiratory outbreak reporting.
2. Investigate respiratory disease outbreaks of reportable pathogens in all settings.
3. For non-reportable respiratory pathogens, prioritize outbreak investigation in high-consequence congregate settings.
4. Provide public health guidance regarding control measures (e.g., prophylaxis, immunization, masking, ventilation, isolation) that reduce the risk of severe outcomes and decrease transmission.

1.4 Confidentiality

Data about individuals collected for outbreak investigations are strictly confidential under Oregon law (Oregon Revised Statute 433-008).

2. THE DISEASE AND ITS EPIDEMIOLOGY

2.1 Etiologic Agents, Illness Descriptions, Incubation Periods

OHA's [Compendium of Respiratory Diseases](#) provides information about selected respiratory pathogens.

2.2 Reservoirs

Humans are reservoirs for most viral causes of human respiratory infection, including influenza, RSV, SARS-CoV-2, and adenovirus, as well as non-viral pathogens such as *B. pertussis*, *Chlamydophila pneumoniae*, *M. tuberculosis*, *Mycoplasma pneumoniae*, and pneumococcus. Birds can harbor *Chlamydophila psittaci* and novel strains of influenza virus that rarely infect humans. Pigs can also harbor novel strains of influenza virus that rarely infect humans. Deer mice are the reservoir for hantavirus in Oregon, rodents (e.g., squirrels, prairie dogs) can carry *Y. pestis*, and *Legionella* species can live in water systems in the built environment.

2.3 Sources and Routes of Transmission

Most respiratory pathogens enter the body through inoculation of respiratory mucosa in the mouth, nose, or eyes or through inhalation of respiratory aerosols containing pathogens released into the air from breathing, coughing and sneezing. Respiratory droplets range in size, and the smallest may remain suspended in the air for prolonged periods of time, allowing for airborne transmission. Respiratory pathogens may also be transmitted by contaminated fomites.

2.4 Periods of Communicability

The OHA [Compendium of Respiratory Diseases](#) provides periods of communicability for selected respiratory pathogens.

2.5 Treatment

Treatment options vary by pathogen and must be prescribed by a healthcare provider. For influenza, antiviral medications including oral oseltamivir are available to treat severe disease (e.g., influenza pneumonia and influenza otitis media) and to reduce the risk of severe disease in certain groups including young children, older adults, individuals with underlying medical conditions, residents of congregate care facilities, pregnant women, and individuals from communities of color and tribal communities. For COVID-19, antiviral medications, including oral nirmatrelvir-ritonavir (Paxlovid®), are available to reduce the risk of severe disease in certain groups including adults ≥50 years of age, unvaccinated individuals, and individuals with underlying medical conditions. Antiviral treatments are not available for other viral respiratory infections.

Please see pathogen-specific Investigative Guidelines for reportable respiratory pathogen treatment recommendations.

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2.6 Susceptibility/Immunity

Widely used and effective immunizations are available against seasonal influenza, pertussis, pneumococcus, SARS CoV-2 and RSV. Vaccine-induced immunity may wane over time, and boosters are required for many diseases.

Susceptibility to less common pathogens or to those that do not have universally available vaccines (e.g., *M. tuberculosis*, hantavirus, adenovirus, rhinovirus, *Legionella*) is essentially universal. Infants, the elderly, and individuals with underlying medical conditions are more likely to suffer serious illness from most pathogens.

3. OUTBREAK DEFINITIONS

3.1 Confirmed Respiratory Disease Outbreak

Two or more epidemiologically linked individuals with the same test-confirmed* respiratory pathogen during a 7-day period.

3.2 Presumptive Respiratory Disease Outbreak

One individual with a test-confirmed* respiratory pathogen epidemiologically linked to one or more individuals with similar symptom profiles during a 7-day period.

3.3 Suspect Respiratory Disease Outbreak

Two or more epidemiologically linked individuals with respiratory disease without a test-confirmed* respiratory pathogen during a 7-day period.

4. LABORATORY SERVICES

4.1 Testing at the Oregon State Public Health Laboratory

Testing through the Oregon State Public Health Laboratory (OSPHL) must be approved by the OHA epidemiologist supporting the outbreak. OSPHL is not able to support testing for all respiratory outbreaks, particularly those involving non-reportable pathogens (e.g., influenza, RSV, COVID-19). In general, testing for respiratory symptoms should be ordered by a healthcare provider following a clinical evaluation and performed by clinical laboratories. OSPHL may support respiratory disease testing in high-consequence congregate-setting outbreaks with unusual characteristics of public-health significance (e.g., high morbidity or mortality, new or uncommon constellation of symptoms, ≥ 3 radiographically confirmed cases of pneumonia in which the etiology remains unknown). Please see pathogen-specific Investigative Guidelines for reportable respiratory pathogen testing recommendations.

* Self-report of test results, including at-home self-test results, is acceptable for non-reportable pathogens, such as SARS-CoV-2, influenza and RSV. Confirmation by the LPHA is not necessary.

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For information regarding laboratory test offerings, specimen collection, storage, and transport, see the OSPHL Test Menu at www.healthoregon.org/labtests.

OSPHL supplies respiratory specimen collection kits to LPHAs for approved testing at OSPHL. To order collection kits, complete the Stockroom Order Request Form, available at www.bitly.com/phl-forms.

5. OUTBREAK RESPONSE

5.1 Outbreak Response

Most respiratory outbreaks in the United States are caused by endemic viruses including SARS-CoV-2, influenza, and respiratory syncytial virus (RSV), which typically increase during the fall and winter months (the “respiratory season”) when respiratory droplet transmission is facilitated to a greater degree by shared air indoors. While these common pathogens are not reportable on an individual case level, outbreaks are required to be reported to health authorities. Although SARS-CoV-2 has not established a defined seasonality, most respiratory outbreaks will be caused by non-reportable, common viruses.

Outbreaks of respiratory disease typically include two or more individuals from the same cohort with respiratory symptoms during a 7-day period. Some reportable conditions may use a different period to determine epidemiologic linkage between cases. For reportable pathogens, disease-specific Investigative Guidelines supersede those included here.

Respiratory disease outbreaks are common events, and most will not come to the attention of public health. In the absence of a presumptive or confirmed case of a reportable pathogen (e.g., measles, tuberculosis, pertussis), public health investigation should be prioritized for settings with risk for high morbidity or mortality, referred to as high-consequence settings. Such settings include healthcare (e.g., long-term care facilities, residential behavioral-health facilities, intellectual and developmental disability, child welfare residential settings) and some non-healthcare (e.g., shelters, jails and prisons, employee housing) facilities.

In most respiratory disease outbreaks, the primary role of the LPHA is to provide standardized public health guidance regarding infection prevention and control, treatment, prophylaxis and vaccination interventions to reduce morbidity and mortality. Other investigation efforts should include recording counts of symptomatic individuals, positive test results, hospital admissions and deaths upon initial report and weekly thereafter. Individual-level case investigation, including the collection of line lists, is not routinely feasible for respiratory disease outbreaks of non-reportable pathogens such as SARS-CoV-2, influenza and RSV.

Evidence of severe morbidity or mortality during a respiratory disease outbreak, regardless of pathogen or setting, should prompt more detailed investigation and includes:

1. Two or more deaths or three or more hospitalizations (or, in a cohort of >1,500 people, hospitalizations of $\geq 0.2\%$ of the cohort) within a 2-week period.

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2. Radiographically confirmed pneumonia in ≥ 3 epidemiologically linked individuals, in which the etiology is unknown.
3. Clusters of new or uncommon signs or symptoms.

In these situations, LPHAs should contact the OHA epi on-call (971-673-1111) (for reportable or unknown respiratory pathogens) or your OHA regional epidemiologist (for non-reportable respiratory pathogens) within 24 hours of receiving evidence of severe morbidity or mortality during a respiratory outbreak. OHA regional epidemiologists are always available to discuss respiratory disease outbreaks that don't meet these criteria and to assist with planning and executing an investigation.

5.2 Creating Outbreak Records

LPHAs should create an Outbreak record when they are notified of a confirmed, presumptive or suspect respiratory disease outbreak (see §3). Outbreak records in non-high-consequence congregate settings may be closed immediately following initial consultation with facility and subsequent documentation in the Outbreaks database.

5.2.1 For non-high-consequence congregate settings

Non-high-consequence congregate settings include many schools, early learning sites, college dormitories and restaurants. In these settings, LPHAs should provide general public health guidance regarding masking, ventilation, treatment, prophylaxis, and vaccination interventions to reduce morbidity and mortality in all congregate settings.

K–12 schools and Department of Early Learning and Care (DEL) childcare providers are asked to report respiratory disease activity (at least one test-confirmed respiratory pathogen) associated with unusually high levels of absenteeism (on any given day) to public health using the following thresholds:

- At the school/facility level (e.g., K–12 school or center-based childcare program): $\geq 30\%$ absenteeism, with at least 10 students/children or staff absent.
- At the cohort level (e.g., classroom or home-based childcare program): $\geq 20\%$ absenteeism, with at least 3 students/children or staff absent.

If an LPHA is notified of a school or childcare setting with elevated absenteeism but no test-confirmed respiratory pathogens, an outbreak does not need to be opened until test confirmation is available[†]. High levels of absenteeism not associated with illness (e.g., the day before a holiday weekend) should not be reported to public health. Schools, early learning and childcare settings are not typically considered high-consequence congregate settings and public health investigation is not indicated under routine circumstances. However, LPHAs are expected to:

[†] Self-report of test results, including at-home self-test results, is acceptable for non-reportable pathogens, such as SARS-CoV-2, influenza and RSV. Confirmation by the LPHA is not necessary.

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- Provide general public health guidance regarding infection prevention and control, treatment, prophylaxis and vaccination to reduce morbidity and mortality in these settings.
- Refer schools should to the Oregon Department of Education/Oregon Health Authority [Communicable Disease Guidance for Schools](#).
- Record absentee proportion estimates in the Outbreaks database if available.

5.2.2 For high-consequence congregate settings

Congregate settings facilitate the transmission of respiratory viruses. Those deemed “high-consequence” serve or house many individuals at risk for severe disease or mortality (i.e., older adults, people with disabilities or comorbidities, other vulnerable populations). In these settings, LPHAs should:

- Provide standardized public health guidance (see table below) regarding infection prevention and control, treatment, prophylaxis and vaccination interventions to reduce morbidity and mortality in high-consequence congregate settings.
- Encourage prompt clinical evaluation of individuals with symptoms and testing to determine etiology of the outbreak.
- Encourage prompt prophylaxis and treatment for individuals with pathogens for which these interventions are available.
- Encourage vaccination and boosting for pathogens for which vaccine is available.
- Record counts of symptomatic individuals, positive test results, hospital admissions and deaths upon initial report and weekly thereafter until 14 days after the last case is identified.
- Record the population at risk (i.e., count of individuals within the congregate setting).
- Document resources offered or provided.
- If a need for infection prevention and control assistance is identified, offer and document infection control consultation with the OHA HAI regional infection preventionist or regional epidemiologist. Infection control assistance can be requested via the [OHA Infection Control Consultation Request Form](#).

Standardized resources for high-consequence congregate settings (limited to non-reportable pathogens, please see relevant investigative guidelines for reportable pathogens):

Resource	Facility type	Notes
CDC Viral Respiratory Pathogens Toolkit for Nursing Homes	All congregate care settings	Guidance for preparing for and responding to respiratory viral infections. See Control section for response checklist.
OHA At-A-Glance Infection Control for Respiratory Pathogens in Healthcare Settings	All congregate care and healthcare settings	Provides at-a-glance summary of transmission-based precautions, PPE, isolation, and return-to-work guidance for healthcare personnel.

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OHA Interim Summary of Long-Term Care Facility Infection Control for COVID-19 and Other Respiratory Pathogens	All long-term care facilities (nursing, assisted living, and residential care facilities)	Summarizes visitation, hand hygiene, ventilation, environmental disinfection, PPE, communal activity, masking, testing, return-to-work, and cohorting guidance.
OHA Respiratory Season Guidance for Admissions from Hospitals to Long-Term Care Facilities	All congregate care and healthcare settings	Details policies and best practices for admissions to LTCFs from hospitals during periods of elevated respiratory virus transmission.
CDC Guidance on Management of COVID-19 in Homeless Service Sites and in Correctional and Detention Facilities	Shelters, jails and carceral settings	Guidance for COVID-19 response.

5.2.3 For non-congregate healthcare settings

Identifying an outbreak in non-congregate healthcare settings including hospitals, outpatient clinics and surgery centers, particularly in large healthcare facilities, can be challenging. Though congregate settings are the priority for outbreak response in the context of limited public health capacity due to the propensity for spread and poor outcomes in these settings, scenarios in which non-congregate healthcare respiratory outbreaks should be prioritized include large outbreaks, outbreaks of extended duration, outbreaks associated with crisis-level staffing shortages, or outbreaks that meet criteria for severe morbidity/mortality (§5.1). In these settings, LPHAs should:

- Provide standardized public health guidance (see table below) regarding infection prevention and control, treatment, prophylaxis and vaccination interventions to reduce morbidity and mortality in these settings.
- Encourage prompt clinical evaluation of individuals with symptoms and testing to determine etiology of the outbreak.
- Encourage prompt prophylaxis and treatment for individuals with pathogens for which these interventions are available.
- Encourage vaccination and boosting for pathogens for which vaccine is available.
- Record counts of symptomatic individuals, positive test results, hospital admissions and deaths upon initial report and weekly thereafter until 14 days after the last case is identified.
- Healthcare facilities should be reminded to conduct appropriate [interfacility transfer notification](#) upon transfer of patients that require transmission-based precautions (see table below).
- Document resources offered or provided.

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- If a need for infection prevention and control assistance is identified, offer and document infection control consultation with the OHA HAI regional infection preventionist or regional epidemiologist. Infection control assistance can be requested via the [OHA Infection Control Consultation Request Form](#).

Standardized resources for non-congregate healthcare settings (limited to non-reportable pathogens, please see relevant investigative guidelines for reportable pathogens):

Resource	Notes
OHA At-A-Glance Infection Control for Respiratory Pathogens in Healthcare Settings	Provides at-a-glance summary of transmission-based precautions, PPE, isolation, return-to-work guidance for healthcare personnel.
OHA Respiratory Season Guidance for Admissions from Hospitals to Long-Term Care Facilities	Details policies and best practices for admissions to LTCFs from hospitals during periods of elevated respiratory virus transmission.
CDC Prevention Strategies for Seasonal Influenza in Healthcare Settings	Infection control guidance, including return-to-work and patient isolation considerations for influenza in healthcare settings.
CDC Infection Prevention and Control Recommendations for Healthcare Personnel (SARS-CoV-2)	Infection control guidance, including PPE and patient isolation considerations for COVID-19 in healthcare settings.
CDC Interim Guidance for Managing Healthcare Personnel with SARS-CoV-2 Infection or Exposure to SARS-CoV-2	COVID-19 return-to-work guidance.
CDC Strategies to Mitigate Healthcare Personnel Staffing Shortages (SARS-CoV-2)	COVID-19 staffing shortage guidance. Crisis-level strategies should be: (1) used to the minimum extent necessary; and (2) paired with broad infection control strategies (e.g., well-fitting masks, testing, ventilation).
CDC Type and Duration of Precautions Recommended for Selected Infections and Conditions	Provides type and duration of precautions by pathogen or condition.

UPDATE LOG

October 2023: Revised all sections to reflect expectations in high-consequence congregate settings vs. all other settings and for reportable vs. non-reportable pathogens. (Sutton, Pierce, McLafferty, Faulkner, Cieslak)

2022: Updated info on timing of notifications, vaccination and treatment; ordering of specimen kits; incorporated information about SARS CoV-2; incorporated K-12 absentee thresholds. (Leman, Humphrey-King, Sutton)

2019: Minor edits for clarity, links updated. (Leman, Cieslak)

2010: Original version. (Bancroft, Leman)