HSE Public Health: National Health Protection Office
FSS Sláinte Poiblí: An Oifig Náisiúnta um Chosaint Sláinte

PUBLIC HEALTH MANAGEMENT of ACUTE RESPIRATORY INFECTIONS (ARI)

Chapter 1: Introduction

Please note that this document should be used in tandem with other Public Health Management of ARI documents.

Readers should not rely solely on the information contained with these guidance outputs. Guidance information is not intended to be a substitute for advice from other relevant sources including and not limited to, the advice from a health professional. Clinical judgement and discretion will be required in the interpretation and application of this guidance document. This guidance document is regularly reviewed based upon emerging evidence at national and international levels and national policy decisions. In tandem with this, the guidance will be formally reviewed on a three-year cycle.

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Working version: 1.0
Publication date: 29th September 2025

VERSION HISTORY

Version History		
Title of Guidance:		**PUBLIC HEALTH MANAGEMENT of ACUTE RESPIRATORY INFECTIONS (ARI) Chapter 1: Introduction**
Approved by:		**Dr. Éamonn O' Moore, Director of National Health Protection**
Version number:		**1.0**
Publication Date:		**29/09/2025**
Scheduled Review Date:		**29/09/2028**
Electronic Location:		**https://www.hpsc.ie/a-z/respiratory/acuterespiratoryinfection/**
Version	**Final Approval Date**	**List section numbers and changes**
1.0	29/09/2025	*De novo* guideline development.

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1 INTRODUCTION

1.1 Purpose

This guidance document is intended for **Public Health teams managing adult and paediatric cases of acute respiratory infections (ARI) in non-healthcare settings**. This includes common viral and bacterial pathogens, as well as emerging respiratory viruses that may require a Public Health response. The document aims to streamline processes by providing a uniform set of recommendations for the most common respiratory illnesses in Ireland. Guidance for managing ARI in healthcare settings can be found **here**.

It will also include information on: Public Health Risk Assessment (PHRA); surveillance; routine infection prevention and control (IPC) advice; outbreak management; and links to relevant antiviral treatment and prophylaxis for cases in different settings, including household (i.e. including multiple occupancy dwellings), congregate settings[1], education and childcare settings, other underserved populations (i.e. including prisons and places of detention), settings for human exposure to infected birds or other animals, and IPC advice for use in specific situations including outbreaks.

This guidance is intended to provide a summary of best practice in relation to the Public Health management of the diseases covered in this document. This guidance document is mainly for use by the National Health Protection Office (NHPO) and regional Departments of Public Health (DPHs), together called the Health Protection Service (HPS) in this document but is also available as a resource for other clinical specialties.

This guidance has been adapted from available international guidelines [1-8] and national subject matter expert recommendations in areas where there are deficiencies or specific requirements to contextualise for the Irish setting (see

[1] **Congregate setting**: refers to a range of facilities where people (most or all of whom are not related) live or stay overnight and use shared spaces (e.g., common sleeping areas, bathrooms, kitchens) such as: homeless shelters, refuges, group homes and State-provided accommodation for refugees and applicants seeking protection. Those living or staying in the facility are referred to as residents.) The **risk of transmission is significantly higher**. In these environments, even general ARI cases may warrant **enhanced infection prevention and control precautions**, including temporary isolation, and improved ventilation.

Appendix A). This guidance review was undertaken by a multidisciplinary subject matter expert group convened in March 2025 to streamline guidance (see **Appendix B)** for membership of Guidance Development Group (GDG)). This guidance has been externally reviewed by Regional Directors of Public Health (RDPHs) and Departments of Public Health (DPHs), Antimicrobial Resistance & Infection Control (AMRIC), and the Irish College of General Practitioners (ICGP).

1.2 Methodology

The methodology applied to develop this guidance was based primarily on good practice guidance (GPG) recommendations. This methodology is used to assist practitioners in effectively implementing health protection functions and public health interventions. Recommendations are determined from colloquial evidence (particularly, expert opinion) and other types of scientific and non-scientific evidence. The process adopted to develop GPG broadly: conforms to the seven main stages outlined in the HSE Public Health: National Health Protection Office – Framework for Health Protection Guidance Development in Ireland. These are modified, as required, to allow a degree of flexibility to meet the needs of a given situation. Within this methodology, it is acknowledged that scientific evidence is not always available and public health organisations often face having to make decisions in situations where there is insufficient (or even conflicting) evidence and/or where the context needs to be considered. In GPG, expert opinion and other non-scientific considerations (e.g. legislation, codes of practice), play an essential role in interpreting and qualifying the scientific evidence (if available) and in formulating recommendations for good practice.

1.3 Future Updates

A review of this guidance will be undertaken three years after publication by the Research and Guideline Development Unit (RGDU) as part of the routine cycle of guidance review. The RGDU may undertake a more rapid update of specific chapters within this guidance if new and relevant evidence is published according to need.

1.4 Disclosure Statement and Funding

The subject matter expert group members were asked to declare potential conflicts of interest at the time of appointment. A policy for the management of conflict of interest was put in place. The RGDU was commissioned by the Director of National Health Protection (DNHP) to undertake the work on this guidance. As such, no specific funding was received for the development of this guidance.

1.5 Epidemiology of ARI

1.5.1 Summary

Acute respiratory infections (ARI) in Ireland are primarily caused by respiratory viruses such as SARS-CoV-2, influenza, respiratory syncytial virus (RSV), rhino/enteroviruses, human metapneumovirus and other seasonal respiratory viruses. The respiratory virus surveillance season in the Northern Hemisphere typically runs from October to May, during which time these viruses circulate at increased levels. However, surveillance of ARI (including COVID-19, influenza and RSV) is conducted year-round in Ireland.

The Health Protection Surveillance Centre (HPSC) has developed a mosaic of integrated respiratory virus surveillance systems, well matched to priority surveillance objectives, in line with European Centre for Disease Prevention and Control (ECDC) and World Health Organization (WHO) recommendations. Key outputs are published on the HPSC website **Integrated Respiratory Virus Bulletin** and the **Respiratory Virus Notification Data Hub**.

Since the majority of ARIs have viral aetiology, there is no role for antibiotics in the management of most ARIs. Moreover, **national guidelines** recommend against the use of antibiotics for most cases of sore throat, acute sinusitis, acute otitis media and acute cough. [9] Overuse and misuse of antimicrobials are major drivers of antimicrobial resistance. [10] However, in cases of ARI, antimicrobial use will be indicated in cases of bacterial superinfection.

1.5.2 Transmission Routes

Respiratory viruses are transmitted primarily through infectious respiratory particles, direct interpersonal contact (skin) or through indirect contact from the environment since some evidence suggests that respiratory viruses may survive on human skin and environmental surfaces for several hours. [11-12]

Infection prevention and control (IPC) precautions are therefore based on limiting and avoiding transmission from contact, from respiratory route, as well as environmental decontamination and cleaning.

1.5.3 Presentation

These may all have similar symptoms including:

- runny nose,
- sore throat,
- cough,
- wheeze, or
- lethargy, body aches and fever.

The **incubation period** is the time between exposure to a virus and the appearance of symptoms. It varies by virus and individual but typically ranges from **12 hours to 5 days**. For some viruses, this can be longer:

- **SARS-CoV-2 (COVID-19)** and **RSV**: up to **8 days**
- **Adenovirus**: up to **14 days**

These periods are **right-skewed**, meaning most people develop symptoms early in the window, but a smaller number may take longer.

Infectious periods often begin **just before symptoms appear** (within 12–24 hours) and usually last for about **5 days** after symptom onset.

Refer to **Chapter 2** for detailed virus-specific data.

1.6 Definitions

1.6.1 Acute Respiratory Infection (ARI)

The term ARI includes presentations both of influenza-like illness (ILI) and other acute viral respiratory infections. [13]

The ARI case definition is as follows:[2]

- Sudden onset of symptoms.

AND

- At least one of the following four respiratory symptoms: cough, sore throat, shortness of breath, coryza.

AND

- A clinician's judgement that the illness is due to an infection.

1.6.2 Outbreak of ARI

An outbreak of ARI is defined as 2 or more epidemiologically linked cases that meet the ARI case definition with onset within 5 days.

An outbreak may be suspected when there is an unusual or unexpected increase in the number of individuals displaying symptoms of ARI for a given time, with specific location (e.g. linked by institution, affiliation, exposure, small geographic area), and for a target population (i.e. residents, staff and/or children and young people).

1.6.3 COVID-19

The case definition (including details for confirmed, probable, and possible cases, and outbreaks) can be found **here**.

1.6.4 Influenza (Influenza A and B)

The case definition (including details for confirmed, probable, and possible cases) can be found **here**.

1.6.5 Influenza of Zoonotic Origin

The case definition (including details for a possible case) can be found **here**.

1.6.6 Respiratory Syncytial Virus (RSV)

The case definition (including details for confirmed case) can be found **here**.

[2] This **case definition** aligns with the European Commission/ European Centre for Disease Prevention and Control case definition. *Ref:* *https://www.hpsc.ie/a-z/respiratory/acuterespiratoryinfection/*

1.6.7 Severe Acute Respiratory Syndrome (SARS)

The case definition (including details for confirmed, probable, and possible cases, and outbreaks) can be found **here**.

1.7 Differential Diagnoses for ARI

It is important to develop a differential diagnosis rapidly for all patients with ARI. This will guide Health & Care Workers (H&CWs) in the initial IPC, diagnostic, Public Health, and treatment measures.

The rate of co-infection among these pathogens is variable. Therefore, a positive diagnostic test for another infection does not necessarily exclude the need for other micro-organism testing.

VIRAL PATHOGENS

Common viral pathogens

- Respiratory syncytial virus (RSV)
- Human metapneumovirus (hMPV)
- Parainfluenza virus
- Rhinoviruses and other enteroviruses (including EV-D68)
- Adenovirus, enterovirus (EV-D68)
- Seasonal coronaviruses (229E, NL63, OC43, and HKU1)
- Bocavirus
- Seasonal influenza (known subtype)

Less common viral pathogens

- Varicella zoster
- Measles
- Hantavirus

Respiratory viruses previously associated with pandemics or international outbreaks

- SARS-CoV-1
- SARS-CoV-2 variant of concern
- MERS
- Emerging subtypes of influenza
- Other zoonotic viral infections

If immunocompromised (for a list of those who are high risk and extremely high risk, see here)

- Cytomegalovirus
- Herpes simplex virus

BACTERIAL PATHOGENS

Common bacterial pathogens

- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- *Moraxella catarrhalis*
- *Legionella pneumophilia, non-pneumophilia legionella*
- *Mycoplasma pneumoniae*
- *Klebsiella pneumoniae*
- *Staphylococcus aureus*

Less common bacterial pathogens

- *Mycobacterium tuberculosis*
- *Burkholderia pseudomallei*
- Rickettsial infections
- *Coxiella burnetii* (Q fever)
- *Leptospira* spp.
- *Chlamydophyla psittaci*

- *Chlamydophyla pneumoniae*
- *Bordetella pertussis*
- *Salmonella sp.*

Resistant pathogens

Risk factor for multidrug-resistant pathogens: intravenous antimicrobial therapy within < 90 days or in hospitalised or recently hospitalised patients.

Resistant pathogens include:

- Methicillin-resistant *S. aureus* (MRSA)
- Non-fermenters such as *Pseudomonas aeruginosa*, *Acinetobacter baumannii*
- Extended spectrum beta-lactamase (ESBL) producers such as *E. coli*, *Klebsiella* spp., *Enterobacter* spp.

OTHER ENDEMIC PATHOGENS

Potential endemic infections

- **Can co-exist with respiratory infections**

- Malaria, dengue, chikungunya, HIV, *pneumocystis jerovecii*, aspergillus.

2 COVID-19 (SARS-CoV-2) Factsheet

COVID-19

Introduction

- SARS-CoV-2 is a respiratory virus that causes COVID-19 disease, first detected in Wuhan, China in 2019.
- The first cases were reported in December 2019 in China, with SARS-CoV-2 identified in early January 2020.
- Since then, cases have been reported in virtually all countries, and the disease was declared by WHO a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and characterised as a pandemic on 11th March 2020.
- Early variants in the first and second waves of COVID-19 in 2020 and early 2021 were associated with markedly higher mortality in older age groups, with extensive care home outbreaks having high attack rates and high mortality.
- Outbreaks in the vaccination era have typically been much less severe.
- The latest Irish epidemiology and case counts as reported by the HPSC are available **here**. [14]

Transmission

- The SARS-CoV-2 virus is a zoonotic virus. The intermediary animal host and source of the virus has not yet been identified but remains under study.
- The SARS-CoV-2 virus is spread mainly via inhalation of infectious respiratory particles coming from coughing or sneezing of an infected person to a person who is in close contact (within 1m). Those infectious respiratory particles can reach or can be introduced in the mouth, nose or eyes of a susceptible person and can result in infection. Crowded closed indoor spaces with poor ventilation can be favourable environments for the virus to spread easily among people. [15]
- Additionally, indirect contact transmission involving contact of a susceptible host with a contaminated object or surface (fomite transmission) may also be possible. [16-17]
- The median incubation period is about 5–6 days (range: 1–14 days). The most infectious period is 1–2 days before symptoms appear. The infectious period can last up to 5–9 days for mild patients, up to 3 weeks for severe patients; and with peak infectivity thought to occur around day 3 of illness.
- Currently **COVID-19 does not follow a true seasonal pattern**. Increases in cases and outbreaks are observed during winter and spring/summer. Waves of increased case numbers/outbreaks tend to occur when new variants arise or following periods of increased socialisation/mass events.
- The continuous genetic evolution of SARS-CoV-2 has occasionally led to the emergence of variants with distinct phenotypes, impacting properties such as virus, transmissibility, disease severity and/or immune evasion. To assist with surveillance of such variants, categories including Variant under Monitoring (VUM), Variant of Interest (VOI) and Variant of Concern (VOC) have been designated, with the current list as reported by WHO see **here**. [18]

Clinical features

- The most common clinical features include: fever, cough, malaise and shortness of breath and other symptoms included in the case definition: general weakness/fatigue, headache, myalgia, sore throat, coryza, anorexia/nausea/vomiting, diarrhoea, altered mental status. In children poor feeding, fussiness, vomiting and stiff neck can also be possible symptoms. The loss of taste and smell is a less common symptom. These seem to be quite specific to, although not exclusively associated with, COVID-19.
- Clinical features range from mild ARI, moderate ARI and, in some cases, Severe Acute Respiratory Infections (SARI) requiring oxygen, and critical disease. Features of critical disease can include respiratory failure, sepsis, septic shock and Acute Respiratory Distress Syndrome (ARDS) with progressive multi-organ failure, thromboembolic disease, requiring intensive care interventions such as non-invasive or invasive mechanical ventilation, dialysis or vasopressors.
- Severe/critical disease has a higher case fatality rate (CFR) and has been seen in older persons (> 60 years old) and those with chronic medical conditions, including non-communicable diseases (NCDs) (e.g. hypertension, cardiac disease, diabetes, chronic lung disease, cerebrovascular disease, dementia, mental health disorders, chronic kidney disease) and some conditions associated with immunosuppression (e.g. cancer and HIV), obesity, smoking, pregnant or recently pregnant: women > 35 years old, obesity, with chronic medical conditions or pregnancy specific disorders (e.g. gestational diabetes and pre-eclampsia/eclampsia) and unvaccinated against COVID-19; with clinical deterioration occurring at around day 7 of illness.
- Complications such as thromboembolism, myocardial injury, arrhythmias, cardiomyopathy, heart failure and encephalopathy have been reported in severe/critical cases.
- Children generally experience asymptomatic or mild illness with COVID-19. However, a small number of cases have been reported with multisystem inflammatory syndrome in children (MIS-C), a rare but serious condition that typically occurs within 2–8 weeks following infection.
- The long-term effects of COVID-19 are referred to as post-acute sequelae of SARS-CoV-2 infection (PASC), more commonly known as **long COVID**. It is defined as a condition where symptoms persist for at least 2 months and typically begin within 3 months of the initial infection. Long COVID can affect both mental and physical health and may involve multiple organ systems. **Global estimates suggest that approximately 6% of individuals who contract COVID-19 develop long COVID**, though prevalence varies by population and study. [19-20]
- Common long COVID-19 symptoms can be found **here.** [21]

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation

    - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
    - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
    - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
    - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services. If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when **managing individuals** with suspected, probable or confirmed COVID-19;
    - including appropriate hand hygiene
    - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
    - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed COVID-19 should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions. PCRA resources can be found **here**.
    - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- Vaccination is a vital tool in the reducing the Public Health burden of SARS-CoV-2 infection, and prevention of severe outcomes of COVID-19, including hospitalisation, ICU admission, development of long COVID-19, and death. [22-25]
- COVID-19 vaccines may not offer timely protection during an outbreak and other control measures are required. COVID-19 vaccination is therefore not a required intervention in outbreak control, but vaccination during an outbreak for eligible but unvaccinated persons may reduce the likelihood and impact of a sustained outbreak and give protection against subsequent exposures.
- The most current vaccine guidance can be found **here**. [26]
- Antivirals are generally not recommended for routine use in treatment of COVID-19. Treatment may be considered for selected seriously immunocompromised COVID-19 patients for the licensed indication. See **here**. [27]

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.

- The most updated recommended therapeutics for COVID-19 can be found **here**. [28]
- Diagnosis and treatment of co-infections like respiratory viral, secondary bacterial infections which can cause febrile illness are important.
- For symptomatic case(s):
  - **Children and Young People (Under 18 Years):**
    - Children who test positive for COVID-19 should stay at home for 3 full days from the day their symptoms started (or the day of the test, if asymptomatic).
    - They may return to school or childcare after 3 days if they feel well and have been fever-free for at least 24 hours. Mild residual symptoms such as a runny nose or slight cough are acceptable if the child is otherwise well.

  - **Adults (18 Years and Over):**
    - Adults who test positive should stay at home for 5 days from the day symptoms began (or the day of the test, if asymptomatic).
    - They may end isolation and return to normal activities after 5 days, provided they have been fever-free for at least 24 hours and have experienced a significant improvement in respiratory symptoms. Mild residual symptoms such as a cough or altered sense of smell may persist and do not necessarily indicate ongoing infectiousness.

  - **Symptomatic Individuals (General Criteria):**
    - Isolation may be ended 5 days after symptom onset, provided the individual has been fever-free for at least 24 hours and has experienced a noticeable improvement in respiratory symptoms. These criteria apply across non-healthcare settings and should guide safe return to normal activities.

3 Influenza Virus Factsheets

SEASONAL INFLUENZA VIRUSES

Introduction

- Circulates worldwide causing outbreaks and seasonal epidemics.
- Some immunity already in the population, depending on age and vaccination status.
- Populations at risk and high risk of severe disease are listed **here**.
- Health and home care workers are at high risk of acquiring influenza virus infection due to increased exposure to patients and risk further spread particularly to vulnerable individuals.
- Evidence also shows that viral shedding following influenza infection can be prolonged among some older people, and among people with chronic long-term medical conditions and individuals on immunosuppressive therapy. [2]
- During an influenza season, the dominant circulating strain may vary and could be replaced by a second strain later in the same season.
- Epidemics can result in high levels of worker/school absenteeism and productivity losses. Clinics and hospitals can be overwhelmed during peak illness periods.
  The latest Irish epidemiology and case/outbreak notification data as reported by the HPSC are available **here**. [14]

Human infection

Seasonal influenzas infections are caused by influenzas A and influenza B viruses.

- These circulate worldwide and spread easily from person to person.
- Can cause annual seasonal peaks in incidence that occur during winter in temperate climates or may circulate year-round in tropical regions.
- Seasonal peaks in incidence can result in high levels of work/school absenteeism and productivity losses. Clinics and hospitals can be overwhelmed during peak illness periods worldwide, these seasonal variations can be found **here**. [29]

Transmission

- Influenza viruses are spread mainly via inhalation of infectious respiratory particles coming from coughing or sneezing of an infected person to a person who is in close contact (within 1 m). Those infectious respiratory particles can reach the mouth, nose or eyes of a susceptible person and can result in infection.
- Indirect contact transmission involving contact of a susceptible host with a contaminated object or surface (fomite transmission) may also be possible.
- The median incubation period of influenza A is slightly under 2 full days and ranges from less than 1 day to 3 to 4 days. Influenza B median incubation period and range may be shorter.
- Children, especially under 5 years of age, shed influenza viruses longer than adults because their lower pre-existing immunity fails to limit viral replication. [30, 31]
- The estimated attack rate is 5–20% and higher in densely populated communities and schools.

Clinical features

- Uncomplicated ARI with high fever, cough, myalgia, a sudden onset of symptoms and viral syndrome that commonly lasts for 1 week and does not require medical attention.
- Can also cause severe illness with pneumonia, **sepsis**, ARDS; seen more in patients at high risk (children < 5 years of age, older patients, pregnant woman and those with chronic medical conditions).

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services. If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed seasonal influenza viruses;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed seasonal influenza viruses should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- Annual vaccination is recommended for pregnant women, children aged 2 – 17 years, older age (≥ 60 years), individuals with chronic medical conditions, individuals with regular contact with pigs, poultry, or waterfowl, and health care workers.
- The most current vaccine guidance can be found **here**. [32]

- Guidance on the use of antiviral agents for prophylaxis of influenza can be found **here**. [33]

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- The most up to date recommended therapeutics and advice for influenza can be found **here**. [33]
- Diagnosis and treatment of co-infections like other respiratory viruses, secondary bacterial infections which can cause febrile illness are important.
- For symptomatic case(s) not treated with an antiviral: the case should be supported to stay away from others for at least 5 days or until symptoms have resolved if longer. [34]
- For symptomatic case(s) treated with an antiviral: the patient should be supported to stay away from others for at least 3 days, or until symptoms have resolved if longer. [34]

INLFUENZA of ZOONOTIC ORIGIN

Introduction

- Depending on the origin host, humans can be infected with avian, swine and other zoonotic influenza viruses.
- Human infections are rare and primarily acquired through direct contact with infected animals or contaminated environments; all these zoonotic influenza type A viruses are distinct from human influenza viruses and have not acquired the ability of sustained transmission among humans.
- Aquatic birds are the primary natural reservoir for most subtypes of influenza A viruses. Most cause asymptomatic or mild infection in birds, where the range of symptoms depends on the virus properties.
- Some avian influenza viruses can cause significant mortality and morbidity in affected populations, particularly domestic poultry. These are termed "highly pathogenic avian influenza (HPAI)" viruses. Humans can be exposed through contact with individual birds (e.g. dead infected wild birds) or infected flocks. In commercial poultry farms, large numbers of birds can become infected, creating an increased risk to exposed humans. Mammals (cattle, sheep, cats) may become infected via birds, and could potentially pass infection on to exposed humans.
- Human infections with these viruses need to be monitored closely. As the extent of virus circulation in animals is often not clear, epidemiological and virological surveillance and follow up of suspected human cases should remain high.
- The latest epidemiology (i.e. animal and human cases) as reported by the ECDC are available **here**.

Transmission

- Most human cases of influenza A(H5N1) and A(H7N9) virus infection have been associated with direct or indirect contact with infected live or dead poultry or cattle.
- Human infections with avian and other zoonotic influenza viruses, though rare, have been reported sporadically. [35]
- Human infections are primarily acquired through direct contact with infected animals or contaminated environments, but do not result in efficient transmission of these viruses between people. [35]

Clinical features

- Human infection with avian, swine and other zoonotic influenza viruses ranges (depending on subtype) from mild, even subclinical infection, including mild upper respiratory tract infection (fever and cough), gastroenteritis or conjunctivitis, through more obvious respiratory infection to rapidly developing severe disease, including severe pneumonia, sepsis with shock, ARDS, and death. Neurological complications can include encephalitis and encephalopathy.

Prevention

Infection prevention and control and public health interventions

- **For General Public:**

- appropriate hand hygiene techniques
- respiratory hygiene
- improved ventilation
- limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).

- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services. If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected or probable influenza of zoonotic origin;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected or probable influenza of zoonotic origin should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered.
- **Confirmed cases will currently not be managed outside of healthcare settings. See Chapter 4 for more details.**

- For individuals working with suspected or confirmed infected poultry or animals, the appropriate PPE consists of:
  - Disposable or polycotton coverall with head coverage that offer protection against dusts, splashes, and liquid sprays (with, as appropriate, safe disposal or cleaning after use);
  - Disposable gloves of lightweight nitrile or vinyl or heavy-duty rubber (not latex) gloves that can be disinfected;
  - Rubber or polyurethane boots that can be cleaned and disinfected;
  - FFP2/FFP3 respirator; and
  - Close fitting goggles or other equipment that gives at least the same level of protection.

Contacts of infected birds/mammals should be assessed and managed in line with guidance on managing human contacts of zoonotic influenza (Chapter 4) and placed under surveillance and swabbed and given post-exposure prophylaxis as appropriate.

Vaccines and medications for prophylaxis

- Not available (*Under current conditions around influenzas of zoonotic activity there is insufficient evidence to recommend routine immunisation with Zoonotic Influenza Vaccine Seqirus (ZIVS) (H5N8) to individuals at risk of occupational exposure to influenza of zoonotic origin viruses*). [36]
- However, seasonal influenza vaccination is recommended for those in regular contact with pigs, poultry or waterfowl. Refer to **SEASONAL INFLUENZA VIRUSES** above.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- Early treatment with neuraminidase inhibitor, as soon as possible. See **Chapter 4** for more details.

4 Respiratory Syncytial Virus (RSV) Factsheet

RESPIRATORY SYNCYTIAL VIRUS (RSV)

Introduction

- RSV is a leading cause of bronchiolitis and pneumonia in infants, and a major contributor to hospitalisations in this age group. [37]
- RSV is an important cause of lower respiratory tract infection (LRTI) in older adults and is associated with exacerbation of chronic obstructive pulmonary disease (COPD) and chronic heart disease.
- Immunocompromised individuals are at increased risk of more severe RSV infection.
- RSV hospitalisations are associated with high mortality in older adults.
- Most people are infected before the age of 2 years and repeat infections are common throughout life due to short-lived immunity.
- RSV activity typically increases from October and declines in February.

Transmission

- RSV spreads mainly via inhalation of infectious respiratory particles coming from coughing or sneezing of an infected person to a person who is in close contact (within 1 m). Those infectious respiratory particles can reach the mouth, nose or eyes of a susceptible person and can result in infection.
- Indirect contact transmission involving contact of a susceptible host with a contaminated object or surface (fomite transmission) may also be possible.
- The incubation period can range from two to eight days.

Clinical features

- Cough is very common, and the presence of wheezing (in infants and young children) may help clinically differentiate RSV infections from other ARI. [38]

RSV affects different age groups differently, but the most common symptoms of the condition include:

- Cough
- Sneezing
- Fever
- Runny nose
- Wheezing
- Sore throat
- Headache
- Congestion
- Fatigue

Infants who contract RSV may develop different symptoms such as:

- Irritability
- Decrease in appetite
- Changes in their breathing pattern
- Apnoea (temporary cessation of breathing, especially during sleep)

In children under 5 years of age, RSV can also cause:

- Rapid breathing
- Trouble swallowing
- Sepsis

Adults with RSV may also experience:

- Disorientation
- Shortness of breath

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services. If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet).
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed RSV;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed RSV should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- The most current immunisation guidance can be found **here**. [39]
- No medication for prevention has been recommended.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- Ribavirin is licensed for the treatment of RSV and may be considered for a small number of patients with severe illness. Treatment should be supervised by an infection specialist, such as a consultant microbiologist or an infectious diseases physician.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature (unlikely to be less than 3 days).

5 Middle East respiratory syndrome coronavirus (MERS-CoV) Factsheet

MERS-CoV

Introduction

- MERS-CoV is a zoonotic virus (i.e. it can be transmitted from animals to humans).
- Type of coronavirus whose primary reservoir is dromedary camels, with origination in bats (similar strains isolated from camels in Egypt, Oman, Qatar and Saudi Arabia).
- First case reported in March 2012 (Saudi Arabia). [40]
- The origins of the virus are not fully understood but according to the analysis of different virus genomes it is believed that it may have originated in bats and later transmitted to camels at some point in the distant past.

Transmission

- Camel-human transmission route is unknown.
- Human-to-human transmission is possible and has occurred predominantly among close contacts and in health care settings (i.e. due to inadequate IPC measures occurred during close contact with infected individual (nosocomial transmission).
- No sustained community transmission has been reported to date.
- Approximately 80% of human cases have been reported by Saudi Arabia, largely because of direct or indirect contact with infected dromedary camels or infected individuals in health care facilities. Cases identified outside the Middle East are usually individuals who appear to have been infected in the Middle East and then travelled to areas outside the region.

Clinical features

- Ranges from asymptomatic to mild ARI: fever, cough and shortness of breath. Pneumonia is common. Gastrointestinal symptoms, including diarrhoea, have also been reported. In some cases, it can present as SARI with progressive organ failure, sepsis and ARDS.
- Some laboratory-confirmed cases of MERS-CoV infection have been reported as asymptomatic, following aggressive contact tracing of a laboratory-confirmed case.
- Approximately 35% of reported patients with MERS-CoV infection died.
- More severe disease in older people, immunosuppressed and those with chronic medical conditions.
- Cough is very common, and the presence of wheezing may help clinically differentiate MERS-CoV from other ARIs.

Prevention

Infection prevention and control and public health interventions

- For all individuals, isolate in a single room (where possible), appropriate hand hygiene techniques, respiratory hygiene, improved ventilation, limiting contact with symptomatic individuals are the main preventive measures (droplet and contact precautions).

- When visiting areas where camels are present, use proper hand hygiene techniques.
- Avoid contact with camels.
- Avoid eating raw meat or unpasteurized milk.
- In non-healthcare settings, enhanced IPC measures are required when managing individuals with suspected or probable MERS-CoV; including appropriate hand hygiene and use of PPE (medical mask, eye protection, gloves, apron/gown), where available.
    - The use of a point of care risk assessment (PCRA) for all H&CWs interacting with individuals with suspected or probable MERS-CoV should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
- Enhanced environmental cleaning should also be implemented.
- **Confirmed cases will currently not be managed outside of healthcare settings**.

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- No vaccine or specific treatment are currently available, however several MERS-CoV specific vaccines and treatments are in clinical development. In the absence of MERS-specific therapeutics, treatment of MERS-CoV patients is supportive and based on the patient's clinical condition.

6 Other Respiratory Viruses Factsheets

ADENOVIRUSES

Introduction

- Infections commonly affect the respiratory system and may cause cold-like symptoms, sore throat, bronchitis and pneumonia. Adenoviruses can also cause other illnesses including gastroenteritis and are an important cause of conjunctivitis. Occurrence is year-round but activity may be higher mid-late winter into spring.
- Limited data suggests the incubation period for adenovirus respiratory infection ranges from 2 to 14 days and symptoms typically last 3 to 5 days.
- Adenoviruses can have a low infectious dose. It can be spread from respiratory, faecal and fomite routes. Presentations may be more severe and infectious periods longer in immunocompromised people. [2]

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages).
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible).
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services). If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet).
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed Adenovirus;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed Adenovirus should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- No vaccine or specific treatment are currently available.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature. The period of exclusion is unlikely to be less than 3 days.

HUMAN METAPNEUMOVIRUS (hMPV)

Introduction

- hMPV is a respiratory virus, first isolated in 2001, however, retrospective serologic studies demonstrated the presence of HMPV antibodies in humans more than 50 years earlier. [41] It is associated with a range of respiratory illnesses in young children and older adults including lower respiratory tract infection (LRTI) and pneumonia.
- Cough is very common, fever, coryza and LRTI signs may also be prevalent in outbreaks.
- Infection is more common in early childhood than older age groups; though may be influenced by clinical manifestation and presentation to healthcare services. Limited surveillance data are available nationally and internationally, however there is a suggestion that re-infection may be common throughout the life course. Activity is higher between autumn and spring, peaking in winter.
- hMPV is transmitted by infectious respiratory particles from close contact with an infected person or contaminated objects and surfaces, including hands. The incubation period is reported as 3 to 6 days.

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services). If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed hMPV;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed hMPV should aid rapid identification, selection of appropriate PPE and

implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
    - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- No vaccine or specific treatment are currently available.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature The period of exclusion is unlikely to be less than 3 days.

HUMAN PARAINFLUENZA VIRUSES

Introduction

- Human parainfluenza virus (PIV) types 1 to 4 cause upper and LRTI in young children, the elderly and the immunocompromised. Re-infections can arise throughout life, though ARI requiring medical care is much less frequent in adults than in young children.
- PIV1 and PIV2 both cause croup (a distinctive barking cough seen predominately in children), with PIV1 most often identified as the cause. Both can also cause upper and lower respiratory illness, and cold-like symptoms. PIV3 is more often associated with bronchiolitis (in children), bronchitis, and pneumonia. PIV4 is less commonly recognised but may cause mild to severe respiratory illnesses. PIV may present with hoarseness in adults amongst common ARI symptoms.
- PIV in older adults may cause exacerbation of underlying conditions such as chronic obstructive pulmonary disease (COPD) and heart failure. PIV infections including primary pneumonia may also be complicated by bacterial pneumonia in care home outbreaks.
- Parainfluenza is detected throughout the year, with peaks in spring and autumn. PIV1 and PIV2 can have biennial (24-month) and annual patterns and PIV3 has shown annual and semi-annual (6-month) cycles. [42]
- The estimated incubation period ranges from two to six days.
- The exact period of infectivity is not known. However, PIV3 (the most infective PIV) is known to shed from the oropharynx for about three to ten days during initial infection. Shedding rates are lower for subsequent infections.

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services. If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet).

- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed Parainfluenza;

- including appropriate hand hygiene
- use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
- The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed Parainfluenza should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
- Enhanced environmental cleaning should also be considered

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those patients with (or at risk of) severe disease, and access to critical care interventions are key.
- No vaccine or specific treatment are currently available.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature The period of exclusion is unlikely to be less than 3 days.

RHINOVIRUSES

Introduction

- Rhinoviruses are the most frequent cause of the common cold. They can also be associated with LRTI in those with underlying respiratory disease and the immunocompromised.
- Rhinoviruses have an average incubation period of two days. Infectiousness is considered to end with resolution of acute symptoms.

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services). If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed Rhinovirus;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed Rhinovirus should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered.

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.

- No vaccine or specific treatment are currently available.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature The period of exclusion is unlikely to be less than 3 days.

SEASONAL CORONAVIRUS

Introduction

- Common human coronaviruses, including types 229E, NL63, OC43, and HKU1 primarily infect the upper respiratory and gastrointestinal tract and are believed to cause a significant proportion of common colds in human adults. Occasionally, coronaviruses can cause more significant LRTIs in humans with pneumonia. This is more likely in immunocompromised individuals, people with cardiopulmonary illnesses, elderly people and young children.
- Analysis suggests incubation periods have a two-to-five-day range, median of three days

Prevention

Infection prevention and control and public health interventions

- **For General Public:**
  - appropriate hand hygiene techniques
  - respiratory hygiene
  - improved ventilation
  - limiting contact with symptomatic individuals and their immediate environment are the main preventive measures (droplet and contact precautions).
- **For congregate settings:**
  - Dispensers for alcohol-based hand sanitisers should be provided throughout the facility. Handwashing/dispensers for alcohol-based hand sanitisers should have appropriate signage and instructions in multiple languages.
  - Optimise natural ventilation within the setting e.g. advise/encourage residents to open windows where feasible.
  - Symptomatic residents should avoid communal & shared spaces with alternative arrangement for accessing essential services). If unavailable, provide medical masks to symptomatic residents who need to access communal areas e.g. collect food from kitchen/buffet.
- **For H&CWs entering or working and Individuals with Occupational Exposure in congregate non-healthcare settings**, enhanced IPC measures are required when managing individuals with suspected, probable or confirmed coronavirus;
  - including appropriate hand hygiene
  - use of PPE (*medical mask, eye protection, gloves, apron/gown*), where available.
  - The use of a point of care risk assessment (PCRA) for all **H&CWs** interacting with individuals with suspected, probable or confirmed coronavirus should aid rapid identification, selection of appropriate PPE and implementation of transmission-based precautions quickly. PCRA resources can be found **here**.
  - Enhanced environmental cleaning should also be considered

Vaccines and medications for prophylaxis

- Not available.

Treatment

- Early recognition of those individuals with (or at risk of) severe disease, and access to assessment by healthcare professional (i.e. general practitioner, Out of Hours Service or Emergency Department) is critical.
- No vaccine or specific treatment are currently available.
- For symptomatic case(s): recommendation for case(s) to stay away from others from onset of symptoms until they no longer feel unwell and no longer has a high temperature. The period of exclusion is unlikely to be less than 3 days.

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8 APPENDIX A

8.1 Further information and resources

- HPSC – ARI
- HSE – Respiratory Tract Infections
- HSE – Antibiotic Prescribing
- Public Health Scotland
    - Acute Respiratory infections
- WHO
    - Clinical care of severe acute respiratory infections – Tool kit
- UKHSA
    - Management of acute respiratory infection outbreaks in care homes guidance;
    - Managing flu, COVID-19 and other acute respiratory infections (ARI) in prisons and other prescribed places of detention (PPDs)
    - Guidance for the management of people exposed to birds or other animals infected with influenza A(H5)
    - Preventing and managing cases and outbreaks of acute respiratory infection (ARI) in the Children and Young People Secure Estate (CYPSE)
- CDC
    - Respiratory Virus Guidance
- ECDC
    - Acute respiratory infections in the EU/EEA: epidemiological update and current public health recommendations – winter 2024/2025
- BC Centre for Disease Control
    - Chapter I – Management of Specific Diseases

9 APPENDIX B

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* *Designated individuals with specific expertise were consulted as needed, on an ad hoc basis, to address particular queries.*