# Acute Respiratory Tract Infection and Precautions Policy

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If you require this document in a different format, please contact the Governance team on 01275 546831
1. Introduction 3
2. Purpose / Objective of the Document 4
3. Scope 4
4. Duties and Responsibilities (individual posts / groups or committees) 5
5. Infection Prevention and Control Procedures 5
6. Training Requirements 10
7. Monitoring of Compliance with the Policy including frequency 10
8. References 11
9. Appendices 12
   Appendix 1 Rhinovirus (the common cold) 13
   Appendix 2 Respiratory syncytial virus (RSV) 14
   Appendix 3 Human parainfluenza viruses 16
   Appendix 4 Middle East Respiratory Syndrome (MERS-CoV) Coronavirus 17
   Appendix 5 Seasonal influenza 18
   Appendix 6 Streptococcus pneumoniae bacteria (Pneumococcal) and Haemophilus influenzae type b (Hib) 22
   Appendix 7 Routes of transmission and definitions 25
   Appendix 8 When to use a surgical face mask or FFP3 mask poster 26
   Appendix 9 Equality Impact Assessment 27
1. Introduction

Avoiding transmission of acute respiratory infections in healthcare settings can prevent considerable mortality, morbidity and healthcare costs. Patients in healthcare settings, which include acute or community hospitals, outpatient clinics, A&E or minor injuries departments, specialised units and primary care, are often vulnerable because of age or chronic disease, and may suffer more severe disease or complications from acute respiratory infections.

An acute respiratory tract infection (RTI) is an acute infectious process affecting the upper and/or lower airways, causing disease ranging from mild to severe that can spread from person to person. Symptoms can include any of the following: fever, rhinorrhoea (runny nose), sore throat and cough, limb or joint pain, headache, lethargy, chest pain and breathing difficulties.

The most common causes of acute upper RTI are viruses such as Rhinoviruses (the common cold appendix 1), Respiratory Syncytial Virus (RSV) (appendix 2), Parainfluenza (appendix 3) Coronavirus (appendix 4) and seasonal Influenza (appendix 5). Lower respiratory tract infections are commonly caused by bacteria such as Streptococcus pneumoniae (Appendix 6) and Haemophilus influenzae (Appendix 6). Infections with these organisms often occur secondarily to a viral infection as S. pneumoniae and H. influenzae are components of the normal upper respiratory tract flora.

Although RTIs can happen at any time of year, they are most common from September to March. Peak activity for RTI caused by influenza occurs during the autumn and winter seasons in temperate regions. In some tropical countries, influenza viruses circulate throughout the year with one or two peaks of activity during rainy seasons. Most deaths associated with influenza in industrialised countries occur among people aged 65 or older.

Routes of transmission are discussed in Appendix 7.

Infectious period
The infectious period is the time period over which an infected person can spread the infection to someone else. This varies by pathogen and by individual (for more information see appendix 1-6). For many acute respiratory viral infections the infectious period is unknown however in general, infectiousness is greatest in the early stages of infection. The infectious period for influenza is thought to be from about one day before the onset of symptoms until 3–5 days later.

Children, immunocompromised individuals and seriously ill people may remain infectious for a longer period, and action should be considered to minimise prolonged shedding of influenza virus by patients with risk factors. Patients with pertussis infection may be infectious until three weeks after the onset of the paroxysmal phase of the disease (PHE 2016).

Persistence in the environment
Evidence shows that influenza viruses can be transferred from surfaces such as glass or plastic to hands up to 24 hours after contamination takes place; from
materials such as pyjamas, magazines and tissues influenza viruses may be transferred for up to 2 hours (PHE 2016).

Hand hygiene and environmental cleaning are therefore important in helping to control spread. Careful and frequent hand hygiene through hand washing, or the use of alcohol hand gel/rub, is recommended as per the World Health Organisations Five Moments (WHO 2017).

**Persons most at risk of developing complications**
Some people are at greater risk of developing more severe disease and complications of RTI (typically pneumonia), including:

- people with
  - chronic lung disease
  - chronic heart disease
  - chronic kidney disease
  - chronic liver disease
  - chronic neurological disease
  - immunosuppression (whether caused by disease or treatment)
  - diabetes mellitus
- pregnant women
- children under five years’ old
- people aged 65 years and older
- people who are obese

2. **Purpose / Objective of the Document**

This policy is to ensure that every member of North Somerset Community Partnership (NSCP) staff involved in patient care and management is aware of the use of personal protective equipment and standard precautions for infection prevention & control when caring for a patient with an acute respiratory tract infection. It will be used in conjunction with other NSCP policies that contribute to the prevention and management of infection and its spread. This policy summarises the most common causes of acute respiratory tract infection as a resource for staff.

3. **Scope**

The focus of this policy is on the prevention of common acute respiratory tract infections rather than dealing with situations such as emerging/pandemic respiratory pathogens (e.g. pandemic influenza) or with infections such as Tuberculosis for which a specific policy is available.

Preventing infection requires the consistent application of infection prevention and control measures by healthcare workers (HCW) and the involvement of the local infection prevention and control team. It also requires efforts to: maximise coverage of seasonal influenza vaccine among vulnerable groups and healthcare workers, and limit the spread of infection by visitors or infected staff, as well as general education and awareness-raising.
4. **Duties and Responsibilities (individual posts / groups or committees)**

**Care Quality Commission (CQC) Registered Managers** are responsible for ensuring that people are cared for safely and with acceptable standards of care. They are legally responsible for ensuring that national standards for safety and quality are met. They are also responsible for any notifications to the CQC.

**Locality Leaders** have an overall responsibility for their area and for ensuring that all staff, guided by line managers, adheres to the correct procedure and process.

It is the responsibility of each independent contractor (e.g. cleaning contractor) to reduce healthcare associated infections (HCAI) and the transmission of infection during interventional procedures. NSCP recommends that contractors apply the principles of this policy as minimum standards within their practices to ensure that their professional and contractual responsibilities are discharged.

**North Somerset Community Partnership responsibility:**
NSCP has a responsibility to ensure that:
- Risk assessments are carried out and that appropriate equipment is available for staff to protect themselves from exposure to infections
- Staff are educated in the appropriate use of such equipment

**Employee responsibility**
All staff has a responsibility to:
- Adhere to NSCP policies and procedures
- Ensure appropriate equipment is available
- Carry out a risk assessment for each clinical activity
- Dispose of PPE and equipment correctly and in line with NSCP policy
- Attend mandatory infection control annual update sessions
- Take personal responsibility for knowing how to access NSCP policies

5. **Infection Prevention and Control Procedures**

This section describes the infection prevention and control precautions that can be taken to reduce the risk of transmitting respiratory infections, whether working in a hospital setting or in a community setting. These precautions must be used in conjunction with risk assessments (PHE 2016).

**Risk Assessments**
Risk assessment should underpin the principles of standard infection control precautions. Assessment of the risk of transmitting infection must form part of every clinical activity. It must consider the risk to both patients and health care workers and result in the appropriate level of infection prevention & control precautions.

Appropriate protective equipment must be used following an assessment of the risk of transmission of organisms to the patient and the risk of contamination to the health care worker’s clothing and skin from blood and bodily fluids.
Documentation
Patients/clients, who are suspected or diagnosed of having an acute respiratory tract infection, by a general practitioner or an acute trust medical practitioner, must have details documented in their EMIS medical records. A patient alert must also be placed on EMIS, as an alert system for suspected/diagnosed cases to alert staff prior to community visits.

An isolation poster must be placed on the door of an isolation room in the In-patients Department, in North Somerset Community Hospital, to alert staff and visitors that the patient has isolation procedures in place. The matron will ensure that posters are available and will take responsibility for monitoring this.

Respiratory hygiene and cough etiquette (Catch it, Bin it, Kill it):
Patients/clients should be advised to follow the recommendations for respiratory hygiene and cough etiquette:
- use a disposable, single use tissue to cover mouth and nose when coughing, sneezing, wiping or blowing nose
- dispose of tissues promptly in a bin
- practice hand hygiene by washing hands with soap and water, and drying them thoroughly after coughing, sneezing or using tissues

Alcohol gel may be used for hand hygiene if the hands are visibly clean. Some patients, such as older people or children may require assistance to contain respiratory secretions.

Hand hygiene
Hand hygiene is part of standard infection control precautions and is the most effective way to prevent transmission by direct contact. Refer to the NSCP Hand Hygiene Policy.
As a minimum, hand hygiene must be performed using the WHO Five Moments (WHO 2017)
- before touching a patient
- before a clean/aseptic procedure
- after exposure to body fluids
- after touching a patient
- after touching the patient’s surroundings

Hand hygiene must also be performed after removing personal protective equipment. Use alcohol hand rub/gel to decontaminate hands which are visibly clean. Use soap and water if hands are visibly soiled.

Decontamination of patient medical equipment:
Equipment must as far as possible be allocated to each individual patient or cohort of patients. Where reusable equipment cannot be dedicated to individual patients (e.g. spirometry equipment), these must be cleaned immediately after patient use and between each patient.

Follow the NSCP Decontamination Policy by using a hypochlorite solution i.e. Actichlor plus™ in a hospital setting and Clinell™ Universal decontamination wipes
(green) in a community setting plus consider equipment specific manufacturers’ instructions.

**Respiratory masks and eye protection**

HCWs assessing or caring for patients with a suspected (clinically diagnosed) or confirmed RTI are advised to wear a surgical face mask when in close contact with the patient (within two metres) either in a hospital, out-patients or community setting.

Eye protection is advisable where there is assessed to be a risk of eye exposure to infectious sprays. For example when caring for patients with persistent cough or sneezing. If single-use eye protection is not used, then appropriate procedures should be implemented to safely disinfect reusable eye protection (in accordance with manufacturer’s instructions).

When patients with RTI are co-horted in one area at North Somerset Community Hospital and multiple patients require care, it may be more practical to put on a surgical face mask on entry to the area and keep it on for the duration of all care activities, or until the mask requires replacement (when it becomes moist or damaged).

Surgical face masks must be removed and disposed of, once the healthcare worker is more than two metres from the patient(s). Masks must be disposed of inside the isolation room in a hospital setting into an orange clinical waste bag.

**Gloves and aprons**

Plastic apron and gloves must be worn in accordance with standard infection control precautions:

- all staff should wear a plastic apron and gloves
- change plastic apron and gloves and perform hand hygiene between contacts with patients (even when they are in the same room in hospital settings)

**Healthcare waste management**

Healthcare waste from patients/clients with suspected or diagnosed RTI must be disposed of as clinical waste (orange bags) as according to the NSCP Healthcare Waste Management policy.

**Aerosol Generating Procedures (AGP) and procedures required**

The following Aerosol Generating Procedures (AGP) are considered likely to generate aerosols capable of transmitting respiratory pathogens when undertaken on patients with an RTI:

- intubation, extubation and related procedures; for example, manual ventilation and open suctioning
- cardiopulmonary resuscitation
- bronchoscopy (unless carried out through a closed circuit ventilation system)
- surgery and post-mortem procedures in which high-speed devices are used
- dental procedures
• non-invasive ventilation (NIV) e.g. bilevel positive airway pressure ventilation (BiPAP)
• continuous positive airway pressure ventilation (CPAP)
• high frequency oscillatory ventilation (HFOV)
• induction of sputum

Certain other procedures/equipment may generate an aerosol from material other than patients’ secretions but are NOT considered to represent a significant infectious risk. Procedures in this category include:
• obtaining diagnostic nose and throat swabs
• administration of pressurised humidified 02
• administration of medication via nebulisation

During nebulisation, the aerosol derives from a non-patient source (the fluid in the nebuliser chamber) and does not carry patient-derived viral particles. If a particle in the aerosol combines with a contaminated mucous membrane, it will cease to be airborne and therefore will not be part of an aerosol. Staff should use appropriate hand hygiene when helping patients to remove nebulisers and/or oxygen masks.

**Use of FFP3 masks**
For all Aerosol Generating Procedures (AGP), an FFP3 respirator (EN149:2001), fluid repellent gown, gloves and eye protection, e.g. goggles or full face visor, should be worn. If single-use eye protection is not used, then appropriate procedures should be implemented to safely disinfect re-usable eye protection (in accordance with manufacturer’s instructions).

It is a legal requirement that any healthcare worker required to wear an FFP3 respirator must have undertaken respirator fit testing prior to using it. Fit testing should be repeated regularly and whenever a need is identified. For example, if a new product is used or where the users face shape may have changed due to weight loss or gain, major dental work, injuries etc. In the event of a breach in infection prevention and control procedures, such as incorrectly worn FFP3 respirators during an AGP, staff should be reviewed by Occupational Health. Occupational Health contact details can be found at [http://www.apohs.nhs.uk/](http://www.apohs.nhs.uk/) with more information found on the NSCP website for referral procedures.

AGP procedures should only be carried out when essential. Where possible, these procedures should be carried out in well-ventilated single rooms with the doors shut. Only those healthcare workers who are needed to undertake the procedure should be present. A gown, gloves, eye protection and an FFP3 respirator should be worn by those undertaking these procedures and by those in the same room.

**Procedures required at North Somerset Community Hospital**
Isolation precautions are designed to minimise transmission of respiratory pathogens from infected patients via droplets to susceptible persons.

**Patient placement:**
• place patient in a single isolation room (who is suspected or diagnosed with a RTI)
• in an outbreak situation, if a single room is not available, then cohort patients with other patients with a confirmed RTI caused by the same pathogen, after a documented risk assessment considering the possibility of co-infection with other pathogens
• if single rooms are in short supply and laboratory confirmation is awaited, after a documented risk assessment, it may be feasible to prioritise patients with cough for single room placement
• ensure patients are at least one metre apart from each other and draw privacy curtains to minimise opportunities for close contact
• facilities such as negative pressure rooms are not necessary to prevent droplet transmission
• display signage to control entry into isolation/cohort areas
• limit the movement of patients outside their room to those necessary for patient management. If patient movement is necessary then the patient should, if possible, wear a surgical face mask to minimise the dispersal of respiratory secretions and reduce environmental contamination
• if the patient is wearing a face mask during transport, then no mask is required by HCWs transporting or accompanying patients for whom droplet precautions are indicated, but careful hand hygiene should be observed; if the patient is unable to wear a mask for any reason, then HCWs transporting or accompanying the patient who will be required to come within two metres of the patient should wear face masks
• if an AGP is required then the patient should be relocated following the advice on airborne precautions in this guidance

Cleaning measures
• ensure that the rooms of in-patients with infection are cleaned daily, and are prioritised for frequently-touched surface cleaning (e.g. over-bed tables, lockers, lavatory surfaces in patient bathrooms, door knobs and equipment in the immediate vicinity of the patient) twice a day and immediately if visibly contaminated
• in addition, it is essential that all frequently-touched surfaces and all horizontal surfaces should be decontaminated after any AGP
• keep the patient environment clean and clutter free
• use disposable cleaning materials
• carry out terminal cleaning of all isolation/cohort rooms following patient discharge following the Cleaning Policy for Infected Clinical Areas

Linen
• Linen must be bagged following the procedures as set out in the NSCP Linen Policy i.e. use red alginate bag for all infected linen then placed into a white linen bag.

Duration for the requirement of transmission-based precautions
The duration of isolation precautions for hospitalised patients must be continued for 24 hours after resolution of fever and respiratory symptoms. For prolonged illness with complications such as pneumonia, control measures must be used during the duration of acute illness until symptoms and signs of
respiratory disease have resolved. Individuals considered potentially infectious should be kept away from communal areas in healthcare settings. Immunosuppressed patients may remain infectious for a longer time period, particularly respiratory viral infections. The decision to discontinue isolation should be based on assessment of the patient’s clinical condition and, where available, testing for persistence of virus should be considered.

(PHE 2016)

Health and Safety Requirements

All staff, including those who have previously been infected with or vaccinated against a specific respiratory pathogen, must follow the recommended infection prevention & control precautions.

Standard infection prevention & control precautions are required from all healthcare workers (HCWs) for the care of all patients and patients’ environments, to prevent cross-transmission from recognised and unrecognised sources of infection. When standard infection control measures alone are insufficient to interrupt transmission, additional infection control precautions are indicated such as

- the use of isolation procedures
- the addition of FFP3 masks, while undertaking an aerosol-generating procedure

Employers are under legal obligation, under the Control of Substances Hazardous to Health (COSHH) regulations, to adequately control the risk of exposure to infections where it cannot be prevented. Employees have an obligation to make full and proper use of any control measures, including PPE, provided by their employer. Vaccination cannot be used as a substitution for such controls as it is not always fully effective in all cases.

See Appendix 1-6 for further details of vaccination and immunisation of RTI's. Detailed information on Influenza vaccination can be found in Appendix 5.

6. Training Requirements

All staff must receive training in infection prevention and control and standard precautions as part of their induction programme, as per NSCP training matrix. Standard precautions must also be included in annual updates which are mandatory for all clinical staff. Infection Prevention & Control must be discussed at staff appraisals and objectives set within Personal Development plans in line with the requirements of The Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance.

7. Monitoring of Compliance with the Policy including frequency

Clinical services across the localities must have has an audit programme which includes Infection Prevention & Control and is monitored by the Infection Prevention
and Control Group. Infection Control audits will be conducted using the quality improvement tools which have been devised by The Infection Prevention Society, and as local need arises, for example, following complaints or incident trends.

8. References

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9. Appendices
Appendix 1    Rhinovirus (the common cold)

Rhinovirus Infections
Rhinovirus (RV) was first isolated in 1956 and was determined to be the most common cause of cold symptoms in adults (Kennedy 2012). Rhinoviruses can also trigger asthma attacks and have been linked to sinus and ear infections.

Common cold is a viral infectious disease of the upper respiratory tract that primarily affects the nose. The throat, sinuses, and vocal cords may also be affected. Signs and symptoms may begin less than two days following exposure. They include coughing, sore throat, runny nose, sneezing, headache, and fever. Individuals usually recover in seven to ten days. Some symptoms may last up to three weeks. In those with other health problems, pneumonia may occasionally develop.

Well over 200 virus strains are implicated in the cause of the common cold with rhinoviruses as the most common. Other viruses that can cause colds include respiratory syncytial virus, human parainfluenza viruses, and human metapneumovirus. They spread through the air during close contact with infected people and indirectly through contact with objects in the environment followed by transfer to the mouth or nose. Risk factors include people being in social situations, not sleeping well, and psychological stress. Symptoms are mostly due to the body’s immune response to the infection rather than to tissue destruction by the viruses themselves. There is no vaccine for the common cold. The primary methods of prevention are wearing personal protective equipment such as face masks, hand washing; not touching the eyes, nose or mouth with unwashed hands; and staying away from other sick people.

Every year, adults have an average of 2–3 colds, and children have even more.

(CDC 2017)
Appendix 2  
Respiratory syncytial virus (RSV)

Respiratory syncytial virus (RSV) is an enveloped RNA virus, in the same family as the human parainfluenza viruses and mumps and measles viruses. RSV is one of the common viruses that cause coughs and colds in winter.

Transmission
RSV is transmitted by large droplets and by secretions from contact with an infected person. The virus can survive on surfaces or objects for about 4 to 7 hours.

The incubation period - the delay between infection and the appearance of symptoms - is short at about 3 to 5 days.

When RSV circulates
In temperate climates such as the UK, RSV occurs regularly each year. Epidemics generally start in November or December and last for 4 to 5 months, peaking over the Christmas and New Year period. The sharp winter peak varies little in timing or magnitude, in contrast to influenza virus infection which is much less predictable in its timing.

Risks of RSV infections
For most people, RSV infection causes a mild respiratory illness. For a small number of people who are at risk of more severe respiratory disease, RSV infection might cause pneumonia or even death.

RSV is the most common cause of bronchiolitis in infants. Over 60% of children have been infected by their first birthday, and over 80% by 2 years of age. The antibodies that develop following early childhood infection do not prevent further RSV infections throughout life. The full extent to which adults are affected by RSV remains unknown.

High-risk groups
The very young (under 1 year of age) and the elderly are at the greatest risk. While most RSV infections usually cause mild illness, infants aged less than 6 months frequently develop the most severe disease such as bronchiolitis and pneumonia, which may result in hospitalisation. Children born prematurely, or with underlying chronic lung disease, and the elderly with chronic disease are also at increased risk of developing severe disease.

Only a minority of adult infections are diagnosed, as RSV is not widely recognised as a cause of respiratory infections in adults. Elderly patients are frequently not investigated microbiologically, as there are fewer viruses present in their respiratory secretions compared with children. This results in the number of adult infections being underestimated.

Symptoms and diagnosis
RSV infection causes symptoms similar to a cold, including rhinitis (runny nose, sneezing or nasal congestion), cough, and sometimes fever. Ear infections and
croup (a barking cough caused by inflammation of the upper airways) can also occur in children.

During the RSV season a laboratory diagnosis is not always necessary as infection can be managed. Specific laboratory tests to confirm RSV require a sample to be taken from the nose and throat.

**Treatment**
There’s no specific treatment suitable for general use, and treatment is therefore aimed at supporting the patient and relieving symptoms. Ribavirin is an anti-viral drug licensed for treatment of RSV infection which is sometimes used in the management of severe illness. Its effectiveness is not established, and it may be associated with toxicity. Palivizumab, a monoclonal antibody therapy, is licensed in the UK for the prevention of serious lower respiratory tract infection caused by RSV in infants at high risk of infection.

**Prevention**
Transmission can be prevented through standard infection control practices such as hand washing. See section 5.

**Vaccination**

**Human metapneumovirus**
Human metapneumovirus (hMPV) is a respiratory pathogen closely related to RSV. It is associated with a range of illnesses from mild infection to severe bronchiolitis and pneumonia. Symptoms may include a runny nose, cough, temperature, sore throat, and wheezing. Like RSV, hMPV is thought to be a seasonal virus occurring mostly during the winter months. However, the number of people which suffer from hMPV each year is still to be determined.

HMPV infection occurs in infants and young children with studies suggesting that nearly everyone has had hMPV infection by the age of 5 years old. However, hMPV has also been found in older children and adults suggesting re-infection may occur later on in life.

(PHE 2017a)
Appendix 3  Human parainfluenza viruses

Human parainfluenza viruses (HPIVs) are a group of spherical, enveloped, negative-sense, single-stranded RNA viruses in the paramyxovirus family. There are 4 types of HPIV (Types 1 to 4) and 2 subtypes (4A and 4B). A fifth putative HPIV, PIV5, (formerly known as SV5) is commonly categorised as an ‘unknown haemabsorbing agent’ when clinical respiratory samples are propagated in laboratory cell culture. These viruses are unstable in the environment and are readily inactivated with soap and water.

**Clinical features**

HPIV1-4 infection is one of the common causes of upper and lower respiratory tract disease, especially in young children. Similar to respiratory syncytial virus (RSV), HPIVs 1 to 4 can cause repeated infections throughout life, and HPIV types 1 to 4 can cause a full spectrum of respiratory illness, including the common cold, croup, and severe lower respiratory tract illness, such as bronchitis, bronchiolitis and pneumonia.

Disease association with HPIV5 is not well established, although it has been implicated in a range of chronic diseases outside the respiratory tract among adults, most HPIV 1-4 infections cause mild disease showing as upper respiratory tract symptoms. However, HPIV infections may also cause more severe diseases especially among the elderly and among patients who are immunocompromised. HPIV infections are important causes of mortality among immunocompromised patients. The incubation period is from 1 to 7 days.

**Epidemiological Features**

HPIVs are spread from respiratory secretions through close contact with infected persons or contact with contaminated surfaces or objects.

HPIV-3 infections had an annual epidemic cycle with a peak in late spring or summer, whereas peaks of HPIV-1 and HPIV-2 occurred at 1 or 2 year intervals in the late autumn or early winter. HPIV-4 has been detected in low levels and mainly appeared in the late autumn or early winter. Children under one year of age were the most commonly affected group, followed by those aged from 1 to 4 years. Other age groups were less affected. Males were slightly more affected than females.

**Treatment and prevention**

No specific antiviral is presently licensed for treatment of HPIV. There are currently no licensed vaccines available to protect against infection caused by any of the HPIVs.

In outbreak and cluster settings, to prevent onward transmission, see section 5.

(PHE 2017b)
Middle East respiratory syndrome (MERS) is a viral respiratory disease caused by a novel coronavirus (MERS-CoV) that was first identified in Saudi Arabia in 2012. Coronaviruses are a large family of viruses that can cause diseases ranging from the common cold to Severe Acute Respiratory Syndrome (SARS). Typical MERS symptoms include fever, cough and shortness of breath. Pneumonia is common, but not always present. Gastrointestinal symptoms, including diarrhoea, have also been reported. Approximately 36% of reported patients with MERS have died. (WHO 2015)

For further information and specific infection control advice for this infection see Middle East Respiratory Syndrome (MERS-CoV) Infection Prevention and Control Guidance (PHE 2016) available at


(PHE 2016a)
Appendix 5  Seasonal influenza

Influenza is an acute viral infection of the respiratory tract. There are three types of influenza virus: A, B and C. Influenza A and influenza B are responsible for most clinical illness. Influenza is highly infectious with a usual incubation period of one to three days.

**Symptoms**
The disease is characterised by the sudden onset of fever, chills, headache, myalgia and extreme fatigue. Other common symptoms include a dry cough, sore throat and stuffy nose.

**High-risk groups**
For otherwise healthy individuals, influenza is an unpleasant but usually self-limiting disease with recovery usually within two to seven days. The illness may be complicated by (and may present as) bronchitis, secondary bacterial pneumonia or, in children, otitis media. Influenza can be complicated more unusually by meningitis, encephalitis or meningoencephalitis. The risk of serious illness from influenza is higher amongst children under six months of age, older people and those with underlying health conditions such as respiratory or cardiac disease, chronic neurological conditions, or immunosuppression and pregnant women. Influenza during pregnancy may also be associated with perinatal mortality, prematurity, smaller neonatal size and lower birth weight. Although primary influenza pneumonia is a rare complication that may occur at any age and carries a high case fatality rate, it was seen more frequently during the 2009 pandemic and the following influenza season. Serological studies in healthcare professionals have shown that approximately 30 to 50% of influenza infections can be asymptomatic but the proportion of influenza infections that are asymptomatic may vary depending on the characteristics of the influenza strain.

**Transmission**
Transmission is by droplets, aerosol, or through direct contact with respiratory secretions of someone with the infection. Influenza spreads rapidly, especially in closed communities.

**When Influenza circulates**
Most cases in the UK tend to occur during an eight- to ten-week period during the winter. The timing, extent and severity of this 'seasonal' influenza can all vary. Influenza A viruses causes outbreaks most years and it is these viruses that are the usual cause of epidemics. Large epidemics occur intermittently. Influenza B tends to cause less severe disease and smaller outbreaks overall. The burden of influenza B disease is mostly in children when the severity of illness can be similar to that associated with influenza A.
Treatment and prevention
There are antiviral drugs available that can be used under certain circumstances to either prevent or treat influenza. NICE has issued guidance on the use of antiviral drugs for the prevention and treatment of influenza at:

http://guidance.nice.org.uk/TA168

See Section 5. It is also always important to encourage and maintain good hand and respiratory hygiene which can help to reduce the spread of influenza. Information and resources on the 'Catch it, Bin it, Kill it', hand and respiratory hygiene campaign can be found at:

https://www.gov.uk/government/organisations/public-health-england

More information on treatment and prophylaxis can be found at


Immunisation
Influenza immunisation has been recommended in the UK since the late 1960s, with the aim of directly protecting those in clinical risk groups who are at a higher risk of influenza associated morbidity and mortality. In 2000, the policy was extended to include all people aged 65 years or over. The list of conditions that constitute a clinical risk group where influenza vaccine is indicated are reviewed regularly by the Joint Committee on Vaccination and Immunisation (JCVI). More information can be found using the link below. In 2010, pregnancy was added as a clinical risk category, and in October 2014 the JCVI advised that morbid obesity (defined as BMI 40+) should be considered a risk factor for seasonal influenza vaccination.

Immunisation should be provided to healthcare and social care workers in direct contact with patients/clients to protect them and to reduce the transmission of influenza within health and social care premises, to contribute to the protection of individuals who may have a suboptimal response to their own immunisations, and to avoid disruption to services that provide their care.

Extension of the influenza programme to Children
In 2012, it was recommended that the programme should be extended to all children aged two to less than seventeen years old. It was advised that the vaccine of choice for the extension to the programme should be live attenuated intranasal influenza vaccine (LAIV Fluenz Tetra®), given the evidence of superior effectiveness in young children, particularly after a single dose, and the potential protection against drifted strains. The route of administration also makes LAIV an easier vaccine to administer and more acceptable to parents and children when compared to an injectable vaccine. Those cohorts eligible for the programme in each UK country will be updated each season in the annual flu letter for England and the respective Chief Medical Officer letters for the Devolved Administrations. England:
The influenza vaccination
All but one of the influenza vaccines available in the UK are inactivated and do not contain live viruses. One vaccine (Fluenz Tetra®) contains live viruses that have been attenuated (weakened) and adapted to cold so that they cannot replicate efficiently at body temperature. None of the influenza vaccines can therefore cause clinical influenza in those that can be vaccinated, although mild coryzal symptoms can occur with the live vaccine. The live vaccine (Fluenz Tetra®) is administered by nasal spray, and the inactivated vaccines are all administered by intramuscular injection with the exception of one preparation (Intanza®) which is administered by the intradermal route. Most of the vaccines are prepared from viruses grown in embryonated hens eggs.

Because of the changing nature of influenza viruses, WHO monitors the epidemiology of influenza viruses throughout the world. Each year it makes recommendations about the strains to be included in vaccines for the forthcoming winter for the northern and southern hemispheres (http://www.who.int/influenza/en/).

Influenza vaccines are prepared using virus strains in line with the WHO recommendations. Most current inactivated influenza vaccines are trivalent, containing two subtypes of influenza A and one B virus; however, quadrivalent vaccines with an additional B virus have been developed. The first authorised quadrivalent influenza vaccine became available for use in the UK in 2013.

Manufacture of influenza vaccines is complex and conducted to a tight schedule, constrained by the period between the announcement of the WHO recommendations and the opportunity to vaccinate before the influenza season. Manufacturers may not be able to respond to unexpected demands for vaccine at short notice.

With the exception of 2014/15, in most recent years, the vaccines have closely matched the influenza A viruses circulating during the influenza season. In the northern hemisphere in 2014/15, however, antigenic drift in the A(H3N2) viruses was observed such that the H3N2 component of the vaccine did not provide optimal protection. Mismatches between the components in the vaccine and circulating viruses do occur from time to time and explains much of the variation in estimates of vaccine effectiveness. When antigenic drift does occur, vaccination is still recommended as some degree of protection may be conferred against the drifted strain and the vaccine should still offer protection against the other strains in the vaccine. The live attenuated influenza vaccine is also thought to provide broader protection than inactivated vaccines, and therefore has potential to offer better protection against strains that have undergone antigenic drift compared to the original virus strains in the vaccine.
Because the trivalent vaccine contains an influenza B strain from a single lineage, mismatches between the vaccine and the circulating B strain occur more frequently. The use of quadrivalent influenza vaccines containing a B strain from each lineage is expected to improve the matching of the vaccine in the future.

Because influenza B is relatively more common in children, the vaccines centrally purchased for the childhood programme in recent years have been quadrivalent preparations (Fluenz Tetra® and Fluarix Tetra®). The childhood programme should therefore contribute to better control of influenza B overall, by reducing transmission across the population.

If a new influenza A subtype were to emerge with epidemic or pandemic potential (as occurred in 2009 with influenza A(H1N1)v), it is unlikely that the influenza vaccine will be well matched to the emerging strain. In these circumstances, as occurred during the second wave of the 2009 pandemic, a monovalent vaccine against that strain may be developed and implemented.

In the elderly, protection produced by the vaccine may be lower, although immunisation has been shown to reduce the incidence of severe disease including bronchopneumonia, hospital admissions and mortality. Live attenuated influenza vaccine has been shown to provide a higher level of protection for children than trivalent inactivated influenza vaccine.

After immunisation, protective immune responses may be achieved within 14 days. Although influenza activity is not usually significant in the UK before the middle of November, the influenza season can start early (as it did in 2003–04), and therefore the ideal time for immunisation is between September and early November. Protection afforded by the vaccine is thought to last for at least one influenza season. However, as the level of protection provided in subsequent seasons is likely to reduce and there may be changes to the circulating strains from one season to the next, annual revaccination is important.

A list of the influenza vaccines available in the UK is published ahead of the influenza season in the annual flu letter for England (available at: https://www.gov.uk/government/collections/annual-flu-programme).

Streptococcus pneumoniae bacteria (Pneumococcal)

Pneumococcal infections are caused by the Streptococcus pneumoniae bacteria, and range from mild to severe. There are more than 90 different strains of Streptococcus pneumoniae (S. pneumoniae) bacteria (known as serotypes), some of which cause more serious infection than others.

The **symptoms of a pneumococcal infection** can vary, depending on the type of infection. Common symptoms include:

- a high temperature
- aches and pains
- headache

**Types of pneumococcal infection**

Pneumococcal infections usually fall into one of two categories:

- **non-invasive pneumococcal infections** – these occur outside the major organs or the blood and tend to be less serious
- **invasive pneumococcal infections** – these occur inside a major organ or the blood and tend to be more serious

Non-invasive pneumococcal infections include:

- bronchitis
- otitis media
- sinusitis

Invasive pneumococcal infections include:

- bacteraemia
- septicaemia
- osteomyelitis
- septic arthritis
- pneumonia
- meningitis

**High Risk Groups**

People with a weakened immune system are most at risk of catching a pneumococcal infection.

Other at-risk groups include:

- babies and young children under two years of age
- adults over 65 years of age
- people who smoke or misuse alcohol
Cases of invasive pneumococcal infection usually peak in the winter, during December and January.

**Treating pneumococcal infections**
Non-invasive pneumococcal infections are usually mild and go away without the need for treatment. More invasive types of pneumococcal infections can be treated with antibiotics

**Pneumococcal vaccines**
There are two different types of pneumococcal vaccine used. These are:

- **pneumococcal conjugate vaccine (PCV)** – which is given to all children as part of the childhood vaccination programme; it's given in three separate doses at eight and 16 weeks and at one year of age

- **pneumococcal polysaccharide vaccine (PPV)** – which is given to people aged 65 years or over, and others who are at high risk

The PCV protects against 13 types of S. pneumoniae bacteria, and the PPV protects against 23 types. It is thought that the PPV is around 50-70% effective at preventing more serious types of invasive pneumococcal infection.

Due to the introduction of the PCV in 2002, the number of people dying from complications that arise from pneumonia has fallen to around 7%.

**Multidrug-resistant Streptococcus pneumoniae (MDRSP)**
The increasing levels of *S. pneumoniae* that had developed a resistance to three or more types of antibiotics has been a major concern. These types of bacteria are known as multidrug-resistant Streptococcus pneumoniae (MDRSP).

Since the introduction of pneumococcal vaccines, fewer cases of infection have led to antibiotics being used less and the chance of bacteria developing resistance to antibiotics becoming smaller.

(NHS Choices 2014)

**Haemophilus influenzae type b (Hib)**
Hib is a bacterium that can cause a number of serious illnesses, particularly in young children. Hib infections used to be a serious health problem in the UK, but the routine immunisation against Hib, given to infants since 1992, means these infections are now rare.

Of the small number of cases that do occur nowadays, most affect adults with long-term (chronic) underlying medical conditions, rather than young children.

Hib bacteria can cause several serious infections, including pneumonia. Meningitis is the most severe illness caused by Hib. Even with treatment, 1 in every 20 children with Hib meningitis will die.
**Transmission**
Hib bacteria can live in the nose and throat of healthy people, and usually don't cause any symptoms. The bacteria are usually spread through infected droplets of fluid in coughs and sneezes. Inhaling the infected droplets or transferring them into the mouth from a contaminated surface can allow the bacteria to spread further into the body, causing infection.

**Hib vaccination**
Vaccinating children against Hib has been very effective in cutting rates of Hib infections. From more than 800 confirmed cases a year in England in the early 1990s, the number of Hib infections has now fallen to fewer than 20 cases a year.

The Hib vaccine is routinely offered to babies as part of the [NHS childhood vaccination programme](https://www.nhs.uk/services/vaccinations). Babies have three separate doses of Hib vaccine – at 8, 12 and 16 weeks of age – as part of the combined [5-in-1 vaccination](https://www.nhs.uk/services/vaccinations).

A booster dose is also offered when a child is one year old as part of the combined [Hib/MenC booster](https://www.nhs.uk/services/vaccinations) to provide longer-term protection.

(NHS Choices 2016)
Appendix 7  Routes of transmission and definitions

Routes of transmission
RTIs are spread through one or more of three main routes.

Droplet transmission
Droplets greater than five microns in size may be generated from the respiratory tract during coughing, sneezing or talking. If droplets from an infected person come into contact with the mucous membranes (mouth or nose) or surface of the eye of a recipient, they can transmit infection. These droplets remain in the air for a short period and travel one to two metres, so physical closeness is required for transmission.

Airborne transmission
Aerosol generating procedures (AGP) are considered to have a greater likelihood of producing aerosols compared to coughing for instance. Aerosols are smaller than the droplets described above and can remain in the air for longer and, therefore, potentially transmit infection by mucous membrane contact or inhalation.

Contact transmission
Contact transmission may be direct or indirect. Infectious agents can be inadvertently passed directly from an infected person (for example after coughing into their hands) to a recipient who, in the absence of correct hand hygiene, may then transfer the organism to the mucous membranes of their mouth, nose or eyes.

Indirect contact transmission takes place when a recipient has contact with a contaminated object, such as furniture or equipment that an infected person may have coughed or sneezed on. In the absence of correct hand hygiene, the recipient may transfer organisms from the contaminated object to the mucous membranes of their mouth, nose or eyes.
When to use a surgical face mask or FFP3 respirator

When caring for patients with suspected or confirmed infectious respiratory virus, all healthcare workers need to – prior to any patient interaction – assess the infectious risk posed to themselves and wear the appropriate personal protective equipment (PPE) to minimise that risk.

### When to use a surgical face mask

- **In cohorted area (but no patient contact)**
  - For example: Cleaning the room, equipment cleaning, discharge patient room cleaning, etc.

- **Close patient contact (within one metre)**
  - For example: Providing patient care, direct home care visits, diagnostic imaging, phlebotomy services, physiotherapy, etc.

<table>
<thead>
<tr>
<th>PPE to be worn</th>
<th>PPE to be worn</th>
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</thead>
<tbody>
<tr>
<td>Surgical face mask (along with other designated PPE for cleaning)</td>
<td>Surgical face mask</td>
</tr>
<tr>
<td>Apron</td>
<td>Apron</td>
</tr>
<tr>
<td>Gloves</td>
<td>Gloves</td>
</tr>
<tr>
<td>Eye protection (if risk of contamination of eyes by splashes or droplets)</td>
<td>Eye protection</td>
</tr>
</tbody>
</table>

### When to use an FFP3 respirator

- **Carrying out potentially infectious aerosol generating procedures**
  - For example: Bronchoscopy, endotracheal intubation, tracheostomy procedures, cardiopulmonary resuscitation, diagnostic sputum induction

- **Where a patient is known/suspected to have an infection spread via the aerosol route**

- **When caring for patients known/suspected to be infected with a newly identified infectious respiratory virus**

<table>
<thead>
<tr>
<th>PPE to be worn</th>
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<tbody>
<tr>
<td>FFP3 respirator</td>
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<tr>
<td>Gown</td>
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<tr>
<td>Gloves</td>
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<tr>
<td>Eye protection</td>
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</tbody>
</table>

- Filleting should be carried out by a properly trained competent fit tester.
- Other guidance is available on bacterial infections and pulmonary tuberculosis.

These images are for illustrative purposes only. Always follow the manufacturer’s instructions.

**Remember**

- PPE should be put on and removed in an order that minimises the potential for cross-contamination.
- The order for PPE removal is gloves, apron or gown, eye protection, surgical face mask or FFP3 respirator.
- Hand hygiene must always be performed following removal of PPE.
- Healthcare workers who have had influenza vaccination, or confirmed influenza infection, are still advised to use the above infection control precautions.
Appendix 9  
Equality Impact Assessment

Equality Impact Assessment

<table>
<thead>
<tr>
<th>Section 1: Initial Assessment</th>
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<tbody>
<tr>
<td><strong>Policy Author</strong></td>
</tr>
<tr>
<td>Julia Bloomfield</td>
</tr>
</tbody>
</table>

| **Title of Policy** | **Is this a new or existing policy?** |
| Acute Respiratory Tract Infection and Precautions Policy | New Policy |

1. **Briefly describe the aims, objectives and purpose of the Policy / Guidance Document:**

This policy is to provide clear guidance to the management and control of acute respiratory tract infections in order to reduce the risks of transmission within the healthcare setting and ensure prompt recognition of those patients that are at risk of infection.

2. **Who is intended to benefit from the proposed process and in what way?**

Staff and patients will benefit from the clear guidance that should help prevent the spread of the acute respiratory tract infections and give appropriate care to those suffering from acute respiratory tract infections.

3. **Who are the main stakeholders in relation to this Policy/Guidance?**

Patients, staff and visitors

4. **Are there concerns that the Policy/Guidance does, or could have, a differential impact due to any of the equality areas?**

<table>
<thead>
<tr>
<th>(Y/N – delete as appropriate)</th>
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</thead>
<tbody>
<tr>
<td>Age</td>
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<tr>
<td>Disability</td>
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<tr>
<td>Gender reassignment</td>
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<tr>
<td>Marriage and Civil Partnership</td>
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<td>Pregnancy and Maternity</td>
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<td>Race</td>
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<td>Religion or Belief</td>
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<td>Sex</td>
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<tr>
<td>Sexual orientation</td>
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</table>
5. What existing evidence (either presumed or otherwise) do you have for this?

| Applies indiscriminately to all and doesn’t disadvantage anyone |

6. Based on the answers given in questions 4 & 5 is there potential for an adverse impact in this policy/guidance?

| No |

7. Can this adverse impact be justified?

| N/A |

If you have not identified adverse impact or you can justify the adverse impact, finish here.

If you have identified adverse impact that cannot be justified, please continue to Section 2

### Section 2: Full Impact Assessment

8. What experts/relevant groups have you approached to explore their views on the issues? Please list the relevant group/experts, how they were consulted and when.

<table>
<thead>
<tr>
<th>Relevant groups/experts</th>
<th>How were the views of these groups obtained?</th>
<th>Date contacted</th>
</tr>
</thead>
</table>

9. Please explain in detail the views of these groups/experts on the issues involved:

<p>| |</p>
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10. Taking into account the views of the groups/experts and the available evidence, what are the risks associated with the policy, weighed against the benefits of the policy if it were to stay as it is:

<table>
<thead>
<tr>
<th>Risks</th>
<th>Benefits</th>
</tr>
</thead>
</table>

Page 28 of 29
If you have found that the risks outweigh the benefits you need to review the policy further and put together an implementation plan which clearly sets out any actions you have identified as a result of undertaking the EIA. These may include actions that need to be carried out before the EIA can be completed or longer-term actions that will be carried out as part of the policy or development.

### 11. Monitoring arrangements and scheduled date to review the policy and Equality Impact Assessment:

<table>
<thead>
<tr>
<th>Review Date</th>
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