

IP&C to minimise transmission of acute respiratory tract infections in healthcare settings

Infection Prevention and Control Team

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Session Outline

- Acute Respiratory Tract Infections
- Routes of transmission
- Infectivity periods
- Persistence in the environment
- Standard Infection Prevention and Control Precautions

Respiratory infections as a communicable disease

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.

Causes and types of RTIs

Upper RTIs (sinuses and throat)

[Common cold](#)

[Sinusitis](#) (sinus infection)

[Tonsillitis](#)

[Laryngitis](#)

Lower RTIs (airways and lungs)

[Bronchitis](#)

[Bronchiolitis](#)

[Chest infection](#)

[Pneumonia](#) (lung infection)

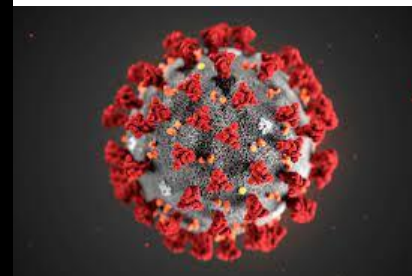
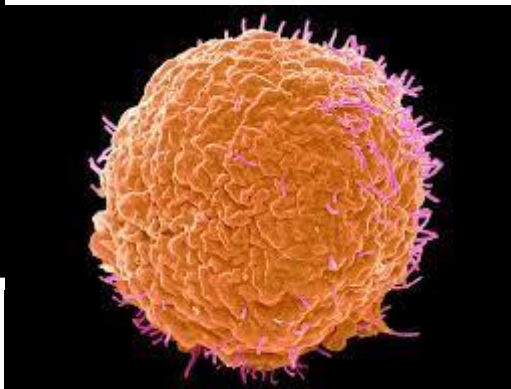
[Flu](#) can be an upper or lower RTI.

Lower RTIs tend to last longer and can be more serious. (NHS 2021)

Micro-organisms

The most common causes of acute upper RTI are viruses such as **rhinoviruses, coronavirus, influenza and respiratory syncytial virus (RSV).**

Lower respiratory tract infections are commonly caused by bacteria such as **Streptococcus pneumoniae and Haemophilus influenzae.** 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.



Streptococcus pneumoniae



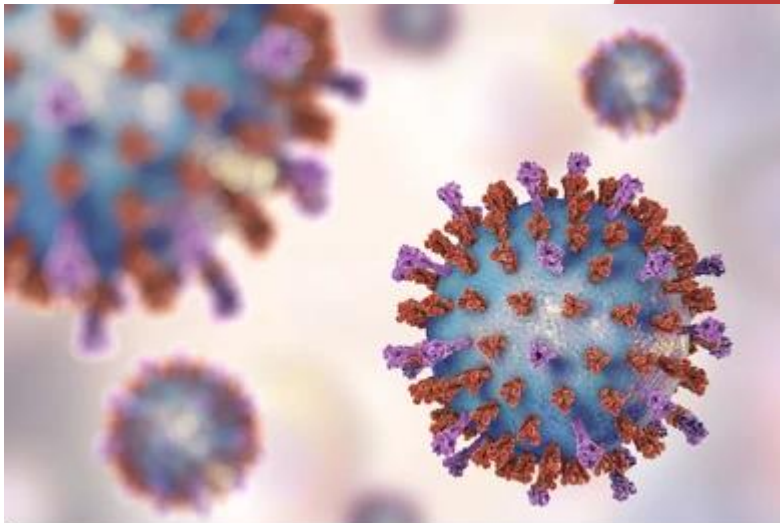
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Respiratory Syncytial Virus (RSV)



RSV is a very common virus and almost all children are infected with it by the time they're 2 years old.

In older children and adults, RSV may cause a [cough](#) or [cold](#), but in young children it can cause bronchiolitis.



Parainfluenza



Human parainfluenza viruses (HPIVs) commonly cause upper and lower respiratory illnesses in infants, young children, older adults, and people with weakened immune systems, but anyone can get infected.



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Seasonal influenza

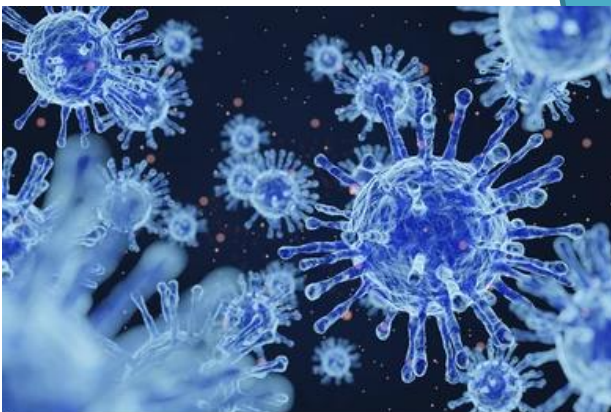


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Influenza (flu) is a viral infection affecting the lungs and airways. There are 2 types of influenza affecting people:

influenza A
influenza B

Influenza B usually causes a milder illness, and is most seen in children.



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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.

Routes of 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.

Higher risk environments for transmission of RTIs include clinical settings where aerosol generating procedures (AGPs) are undertaken such as intensive care units, augmented care settings and neonatal intensive care units

Routes of transmission

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.

Respiratory Tract Infections

Infectious period

- Varies by pathogen & by the individual
- For many the infectious period is unknown but assumed to equate to the duration of symptoms.
- Greatest in the early stages
- influenza - 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
- Patients with pertussis infection may be infectious until three weeks

Persistence in the environment

- 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.
- RSV can survive on surfaces or objects for about 4 to 7 hours.

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

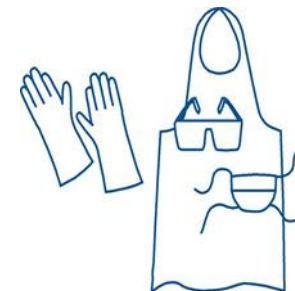
Standard Infection Control Precautions

All staff, including those who have previously been infected with or vaccinated against a specific respiratory pathogen, should use IP&C precautions for all patients to prevent cross contamination

Interrupting transmission of a respiratory pathogen requires more than one category of respiratory precautions, including:

- the use of droplet and contact precautions at all times
- the addition of airborne precautions while undertaking an aerosol-generating procedure (AGP)

procedure (AGP)



Isolation Procedures

- Triage before appointment
- Isolate or segregate patient on arrival (wait in a car)
- Environment must be cleanable and wipe able
- Encourage social distancing and limit patient movement
- Use PPE within 2 metres of patient - mask, gloves, apron, visor
- Door - closed with signage
- Essential staff only
- Dedicated medical equipment
- Encourage patient to wear a face mask

**Catch it.
Bin it.
Kill it.**



HELP US
HELP YOU
STAY WELL THIS WINTER

Stop the spread of flu germs.
Use a tissue and wash your hands thoroughly.

Surgical Face Masks

Type IIR

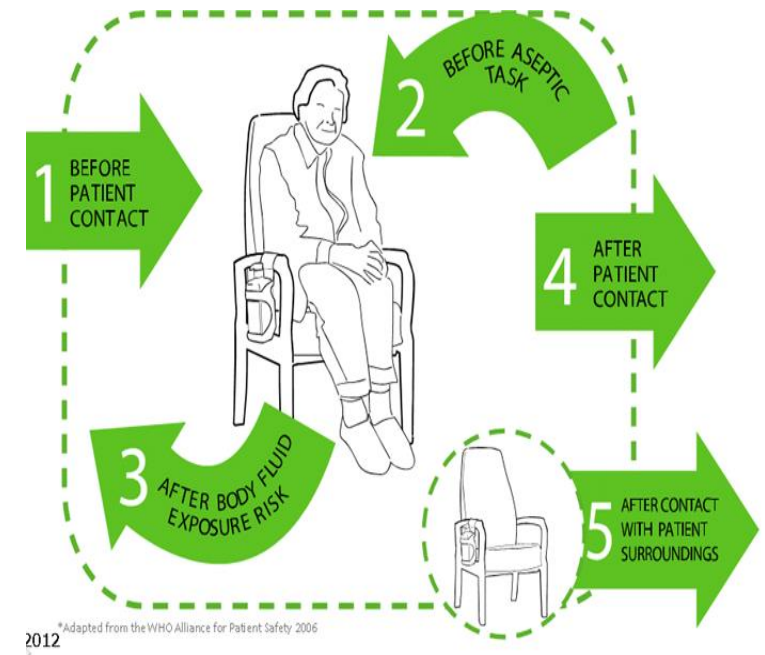
- Well fitted covering both nose and mouth
- Not dangled around neck
- Not touched once put on until the point of removal
- Change when they become moist or damaged
- Remove at least 2 metre away from the patient
- Wear once and then discard as healthcare (clinical) waste



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). Eye protection is advisable where there is assessed to be a risk of eye exposure to infectious sprays e.g. when caring for patients with persistent cough or sneezing

Contact Precautions Hand Hygiene

- Soap and Water
- Alcohol gel
- 5 moments of hand hygiene
- During and after removal of PPE
- Moisturiser to prevent dermatitis



Bare Below the Elbow

Keep nails short

Avoid rings with ridges or stones

No artificial nails or nail polish

Remove wrist watches, bracelets

Roll up sleeves

Challenge all staff if not compliant



Aprons, Gowns, Gloves and Face Protection

- **Gloves**
 - Single use – do not wash or gel
 - Changed between patients and tasks
- **Eye/Face Protection**
 - Full face shield/visor
 - Goggles
 - May be re-usable if cleanable and wipe able
- **Aprons**
 - Single use
 - Remove by breaking at the neck and back ties
- **Gowns**
 - For AGP or heavy splash risk



PPE for Aerosol Generating Procedures

Some procedures on patients can generate tiny particles from the respiratory tract which might be inhaled by people in the room

- The list of AGP can be found in [COVID-19 infection prevention and control guidance \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672222/covid-19-prevention-and-control-guidance.pdf)
- AGP unlikely in primary care
- Only people involved in procedure should be present
- Wear high level PPE
 - Long-sleeved gown
 - Eye protection (visor or goggles)
 - FFP3 respirator – must be fit tested



Uniforms

- Uniforms
 - Transported home in disposable plastic bag or fabric bag
 - Laundering
 - Maximum temperature for the fabric
 - Separate and no more than half load
 - Ironed or tumble dried
- Remove Lanyards during clinical care



Minimising Environmental Contamination

- **Open windows to allow fresh air to circulate**
- Decontaminate surfaces and furniture between patients
- Clean Environment Daily
 - Clean with detergent followed by disinfection with chlorine 1,000 ppm or combined product (Milton, Chlorclean, Actichlor Plus)
 - Use clean colour coded cleaning equipment
 - disposable colour coded cloths
 - Launder mop heads (daily) or use disposable
 - Consider cleaning needs electronic equipment (e.g. computers)
 - Do not use fans
 - Document on cleaning schedules



Equipment Decontamination

- Equipment
 - Single use where possible
 - Reusable must be cleanable and wipe able
 - Document on cleaning schedules
- Decontaminate according to manufacturers guidelines
 - Detergent / Disinfection wipe
 - Detergent / Alcohol

References

- [Bronchiolitis - Causes - NHS \(www.nhs.uk\)](http://www.nhs.uk)
- [Coronavirus \(COVID-19\): guidance - GOV.UK \(www.gov.uk\)](http://www.gov.uk)
- [Policies - Infection Prevention Control](#)
- [Coronavirus » Primary care \(england.nhs.uk\)](http://england.nhs.uk)
- [Respiratory syncytial virus \(RSV\): symptoms, transmission, prevention, treatment - GOV.UK \(www.gov.uk\)](http://www.gov.uk)
- [Infection control precautions to minimise transmission of acute respiratory tract infections in healthcare settings \(publishing.service.gov.uk\)](http://publishing.service.gov.uk)

Questions

