

# Infection Prevention

## Mini Course

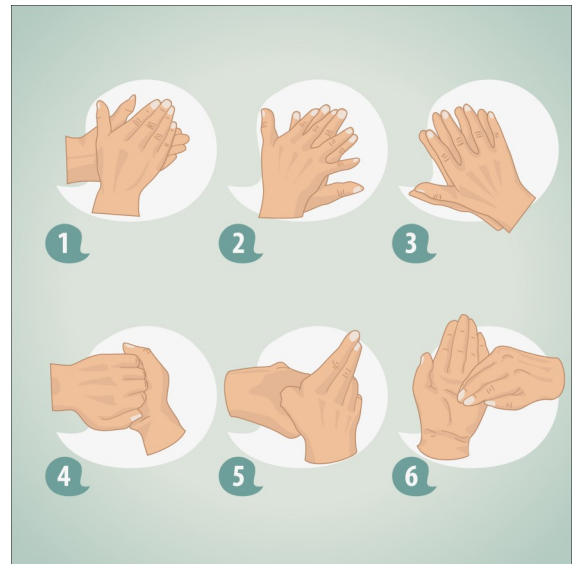
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**This short course describes the most common infectious diseases and provides useful advice on preventing and controlling infection.**

The current COVID-19 outbreak means everyone is thinking about infectious diseases. However, Coronavirus is not the only infectious agent people may face in their daily lives.

Following the common sense tips in this booklet can drastically reduce your risk of becoming ill or spreading infection to others.



### Learning outcomes

- ⇒ Understand the difference between different pathogens and the conditions they cause
- ⇒ Understand the “chain of infection”
- ⇒ Understand the different preventative measures that can prevent and control infection

This short course is adapted from the Whitehall Training online course “**Infection Prevention and Control Awareness**,” available at [www.whitehalltraining.com](http://www.whitehalltraining.com)

# Who is responsible for infection prevention?

## Infection prevention is everyone's responsibility.

Wherever you are in the world, there will be rules and regulations dictating what infection prevention and control procedures **employers** should put in place. Workplaces vary and those involved in care and education will have specific rules in place to protect against infection.

However, there are common sense measures that can work in any work place setting –

- ⇒ Having appropriate systems to manage and monitor the prevention and control of infection
- ⇒ Providing and maintaining a clean and appropriate environment that facilitates the prevention and control of infections
- ⇒ Providing suitable accurate information on infections to staff, visitors etc.
- ⇒ Ensuring that infected people are identified promptly and receive the appropriate treatment and care to reduce the risk of passing the infection to others. This can be as simple as ensuring that ill staff stay at home until they no longer have symptoms
- ⇒ Ensure all staff are fully involved in the process of preventing and controlling infection
- ⇒ Have, and adhere to, policies designed to prevent and control infections
- ⇒ Providing suitable handwashing facilities.

It is the responsibility of **employees** to take safety measures to prevent and control the spread of infection in the workplace; this includes working safely to protect themselves, other staff, visitors and individuals from infections.

Employees have a duty to use safe ways of working and put sensible measures into practice; for example, by effective hand washing, not coming to work when ill, not wearing jewellery (because jewellery can carry many pathogens – such as bacteria and viruses) etc.

# What are the different types of pathogens & infections?

## How can infections enter the body?

Infections can enter the body in several different ways, as the table below illustrates, with examples for each entry route –

Ear	<ul style="list-style-type: none"><li>• Ear infections</li></ul>
Conjunctiva of eye	<ul style="list-style-type: none"><li>• Conjunctivitis</li></ul>
Mouth/oral	<ul style="list-style-type: none"><li>• Food poisoning</li><li>• Bacterial pneumonia</li></ul>
Broken skin (cross-cutaneous)	<ul style="list-style-type: none"><li>• Impetigo</li><li>• Warts</li><li>• Athlete's Foot</li><li>• Tetanus</li></ul>
Insect bites	<ul style="list-style-type: none"><li>• Malaria</li></ul>
Anus	<ul style="list-style-type: none"><li>• Sexually-transmitted diseases</li></ul>
Urethra (urogenital)	<ul style="list-style-type: none"><li>• HIV</li><li>• Urethritis</li><li>• Cystitis</li></ul>
Placenta (to foetus from Mother)	<ul style="list-style-type: none"><li>• Toxoplasmosis</li><li>• Rubella</li><li>• Chlamydia</li></ul>
Vagina or Penis	<ul style="list-style-type: none"><li>• Sexually-transmitted diseases</li><li>• Thrush</li></ul>

## Bacteria

Bacteria is the plural for the word bacterium. Many bacteria are essential for our health but some can cause disease, and these are known as "pathogens."

Bacteria are single-cell microorganisms that can reproduce extremely quickly and can form colonies in their millions – sometimes clearly visible to the naked eye.



Bacteria can be found virtually anywhere. For instance, the human mouth contains over 500 species of bacteria. Bacteria can be found in –

- ⇒ The air
- ⇒ The ground (soil)
- ⇒ Water
- ⇒ On and inside plants
- ⇒ On and inside animals
- ⇒ On and inside humans etc.

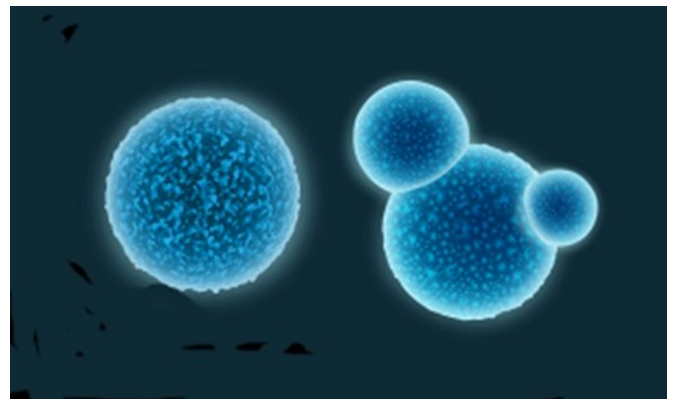
Like every other living thing, bacteria need the following to reproduce –

- ⇒ Moisture
- ⇒ Warmth
- ⇒ Food
- ⇒ Time

Everything bacteria need to thrive are present in food preparation areas hence why safety standards have to be of the highest.

When we think about food and storage, preparation, cooking, cooling etc. it is important to stick within certain temperature ranges.

This is covered later in this course.



Some of the most common bacteria that can make people ill are –

- ⇒ ***Campylobacter*** – the most common cause of food poisoning in the UK
- ⇒ ***Clostridium botulinum*** – which can cause botulism
- ⇒ ***Escherichia coli (E-coli)*** – which can cause gastroenteritis, urinary tract infections, neonatal meningitis, haemorrhagic colitis, and Crohn's disease.
- ⇒ ***Listeria*** – which can cause listeriosis, leading to meningitis or sepsis
- ⇒ ***Salmonella*** – which can cause food poisoning



## Viral pathogens

Viruses are much smaller than bacteria. They are often little more than a strand of genetic material with a protein shell to protect it. They have no organs, they cannot eat or breathe – they cannot even reproduce on their own.

But when they get into a host cell, they can add their genetic code to that of the cell and turn it into a virus factory – making hundreds of thousands of exact copies of themselves.

Once the host cell is filled, it will burst and the viruses will spread via the bloodstream, airways or other routes.

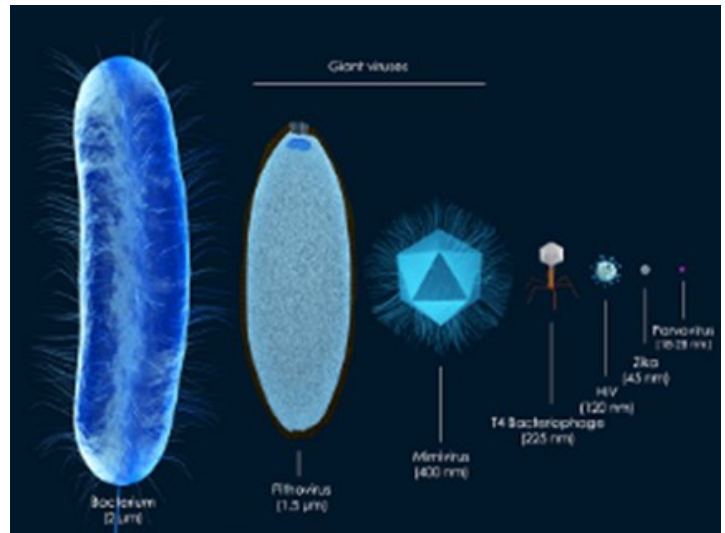
Their outer shells come in a range of, mostly geometric shapes, such as polyhedra or spheres.

Many viruses cannot survive too long outside of a host. However, the shell of some viruses can protect them from damage for a long time meaning that they can be found in the; soil, air, water etc.

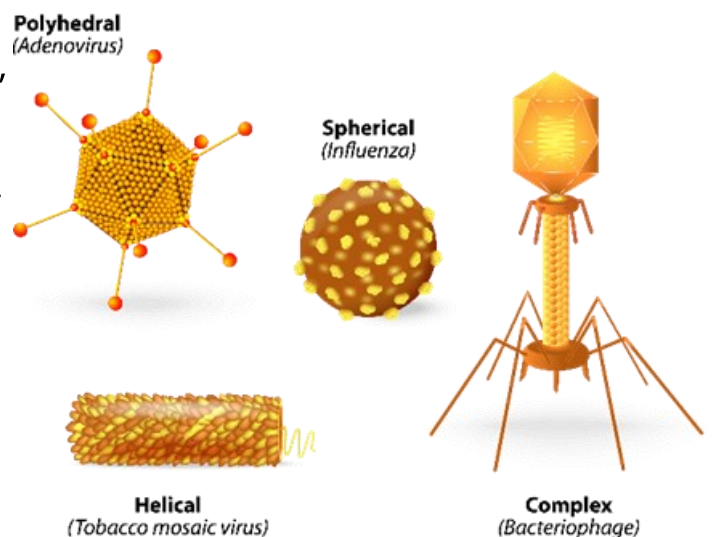
Viruses can be passed air-borne (sneezing), person to person contact (with an infected person), touching a contaminated surface, or consuming infected food and water.

Some of the most common Viral Pathogens are –

- ⇒ **Coronavirus** – which causes influenza and colds
- ⇒ **Norovirus** – which is known as the winter vomiting virus
- ⇒ **Hepatitis A** – which can cause a liver infection
- ⇒ **Rotavirus** – which can cause diarrhoea in infants



## VIRAL SHAPES



## Parasites (parasitic pathogens)

*Parasite = an organism that lives in or on an organism of another species (its host) and benefits by deriving nutrients at the other's expense.*

**Oxford English Dictionary**

Parasites may be microscopic “germs” or can be quite large – tapeworms for example can be several metres long!

They are very often found in the intestines of the living “host.”

Parasites can also be found in water (lakes, rivers and ponds).



The most common way of becoming infected with a parasite is through untreated water or contaminated food and contaminated faeces.

Some of the most common parasites are –

- ⇒ ***Cryptosporidium*** – which causes a form of diarrhoea
- ⇒ ***Entamoeba histolytica*** – which can cause amoebic dysentery among other diseases
- ⇒ ***Trichinella*** – which is often found in undercooked pork and can cause trichinellosis
- ⇒ ***Giardia*** – a water-borne parasite that can cause the gut disease, giardiasis

## Moulds

Moulds are a type of fungus that can reproduce without producing a mushroom, or other fruiting body. They are generally associated with decomposing food.

Moulds can look alarming but are not generally as harmful as either bacteria or viruses. However, some moulds can cause food poisoning as they are toxic or can produce toxic compounds. Moulds can also release spores that may cause an allergic reaction.



## Other fungi

Fungi are tiny thread-like organisms that can build up into colonies that may look like cotton wool. They normally live on “hosts” (either living or dead). Fungi that live on dead hosts are called “saprophytes” and cause rotting. Fungi that live on live hosts and cause diseases are technically “parasites.”

Common fungal diseases include –

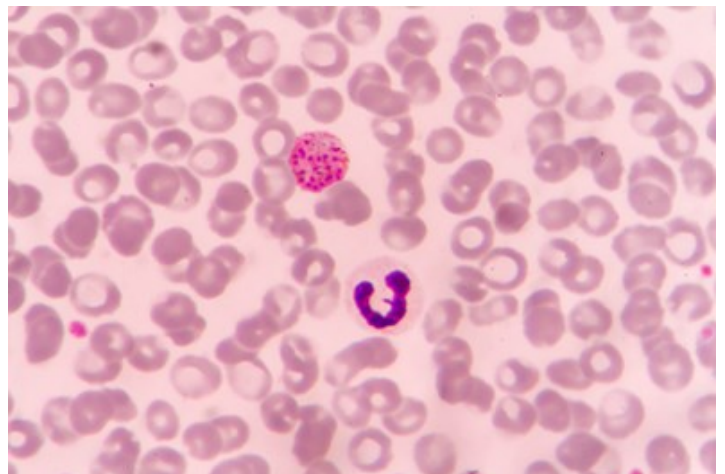
- ⇒ **Ringworm**
- ⇒ **Toe or finger nail fungus**
- ⇒ **Candida**
- ⇒ **Athlete’s foot**



## Protozoa

Protozoa are single-celled organisms that live in water and damp conditions.

**Malaria** is an example.



We will now go on to look at some of the most common diseases you may encounter...

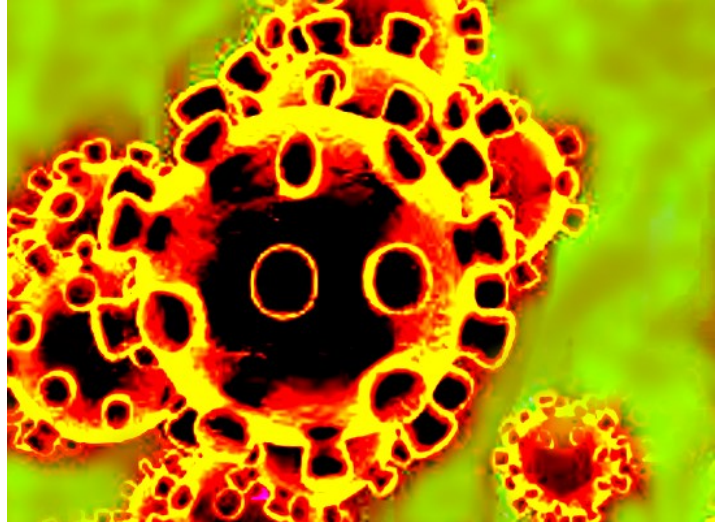
## What are the commonest infections?

There are various types of highly contagious infections that people can acquire. In some cases, one organism may cause more than one disease depending upon how it enters the body.

### COVID-19 (Novel Coronavirus)

COVID-19 is the name currently used for the coronavirus that was first reported from Wuhan, China on 31st Dec 2019.

Though it is still relatively uncommon globally, especially compared with influenza, its capacity to spread is causing global concern. Because it is a new virus, populations do not have an existing immunity. Mortality rate seems to be 2-3%, which is roughly ten-times that of influenza.



Relatively little is still known about this disease. Advice is still evolving so check the **most recent advice** available from the WHO or your local national public health authority.

Most people who become infected experience mild illness and recover, but it can be more severe for others. Follow this link for a useful WHO video explaining how to protect your health and that of others. <https://youtu.be/1APwq1df6Mw>

The key advice to help prevent the spread of COVID-19 is **frequent and effective hand washing** (see later in this course for instructions on the best way to wash your hands to prevent the spread of infection). Apart from hand washing, sensible precautions are –

- ⇒ **Keep your distance** – try to stay at least one metre from anyone who is coughing or sneezing
- ⇒ **Don't touch your face** – touching your eyes nose and mouth is a common way for viruses like COVID-19 to get transferred from contaminated hands into your body.
- ⇒ **Catch sneezes** – when you sneeze, try to cover your nose and mouth with a tissue (and dispose of it immediately) or the crook of your elbow if you have no tissue.
- ⇒ **Seek advice** – if you feel unwell, call your local health authority. If you have a fever, cough and trouble breathing, seek medical attention - but follow the advice you are given. Call in advance so you can be told where to go that will give you the best care whilst reducing the risk you may spread infection to others.



## Impetigo

Impetigo is caused when the skin is infected by bacteria (either *Staphylococcus aureus* or *Streptococcus pyogenes*).

It is a common and highly infectious condition that causes blisters and sores (it affects more children than adults, however, adults can be infected).

There are two types of impetigo –

- ⇒ **Non-bullous impetigo** – red sores usually around the mouth and nose (but can affect other areas), sores burst and leave golden crusts, once dried, and the crusts become red marks that fade in time. The sores shouldn't be painful, however, they are very itchy so scratching them can increase the chance of them developing elsewhere on the body or passing on to others
- ⇒ **Bullous impetigo** – fluid-filled blisters usually starting on the centre of the body between the waist and the neck (but can be on the arms and legs). The blisters can spread quickly (and be painful) and then burst. They can be itchy, which encourages the host to scratch and pass the infection to other parts of the body or other people.

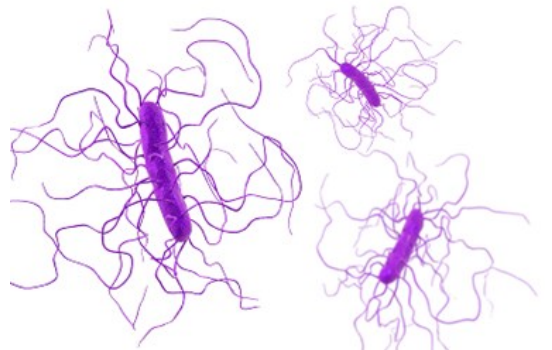


## Clostridium difficile (C Diff)

A bacterial infection that can affect the bowel and cause diarrhoea. It is quite common to develop this after a course of antibiotics, however, it is very easily spread.

Symptoms include –

- ⇒ Watery diarrhoea (which can also be bloody)
- ⇒ Stomach cramps
- ⇒ Nausea
- ⇒ Dehydration and passing urine less frequently
- ⇒ Fever – high temperature
- ⇒ Loss of appetite accompanied with weight loss



Isolation of infected people will be required as it can easily spread from person to person.

Usually a new treatment of antibiotics will be required. In extreme cases, surgery may be required as bowel perforation can occur.

## Carbapenem-resistant Enterobacteriaceae (CRE)

CRE is a family of bacteria that live in the stomach and don't usually cause any problems. Sometimes, CRE can get into the bloodstream or bladder causing serious infections that can be life threatening.

CRE are resistant to a group of antibiotics called Carbapenem that are often prescribed to treat bacterial infections.

Healthy people don't usually contract CRE infections, they are more common in healthcare settings (hospitals, care and nursing homes etc.).

People who have care needs that require certain equipment (ventilators, catheters, IV catheters etc.) are more at risk alongside those who have been on long-term antibiotic treatment.

Infected people will need to be isolated whilst they are treated and "barrier nursing" will usually be put into place. CRE can be passed on person to person or contact with infected wounds and stools.



## Escherichia Coli (E-coli) 0157

A bacterial infection usually found in the gut and faeces of many animals (especially cattle). It causes severe stomach pain, vomiting, fever, bloody diarrhoea and can cause kidney failure.

There are various ways of contracting E-coli –

- ⇒ eating infected food, such as raw leafy vegetables, raw milk products, or undercooked meats
- ⇒ touching infected animals or contact with animal faeces
- ⇒ contact with infected people, particularly if hands haven't been washed after using the toilet or before handling food
- ⇒ drinking, swimming or playing in infected water, for example, ponds or streams.

There is not usually a direct treatment as the symptoms should pass over time. However, people need monitoring as they may face dehydration (so ensuring they receive maximum fluid intake is required).





# Staphylococcus

This is a type of bacterium that can cause a large number of different infections in the human body. It is estimated that there are about 40 variants of Staphylococcus.

Staphylococci are found on most people's skin and do not usually cause disease until they enter the body.

The most common form to cause infection is *Staphylococcus aureus* – when this enters the body (through wounds or by a respiratory tract, as examples) it can cause extremely serious infections.



Infections can range from mild (pimples) up to pus-filled boils (abscesses – called furuncles).

If Staphylococcus enters the bloodstream, it can cause bacteraemia (blood infection) – some of the signs for this type are: fever and chills and low blood pressure.

It can travel to different parts of the body to create some of the following –

- ⇒ Pneumonia – when the bacteria enters the lungs
- ⇒ Sepsis (blood poisoning) – this can lead to multi organ failure
- ⇒ Osteomyelitis – when the infection enters the bones

Staphylococcus can also travel along medical equipment (dialysis tubing, catheters, feeding tubes etc.).

It can be “transferred” by soiled bed linen and dressings, food handlers not washing their hands prior to preparing food, people engaging in contact sports, people who already have open wounds etc.

The initial treatment (after the strand of it is tested and diagnosed) would primarily be antibiotics. There could also be the option of wound drainage and the removal of medical devices / equipment.

## Methicillin-resistant Staphylococcus Aureus (MRSA)

MRSA is one of the notorious “super bugs.” It is a type of staphylococcus that is resistant to a number of antibiotics (examples being; penicillin, amoxicillin, methicillin). It has been particularly prominent in healthcare services (hospitals, nursing homes, and even prisons).



MRSA can live harmlessly on the skin, very often in the nose, armpits, groin and buttocks. It can enter the body through an abrasion or cut.

It can be passed on person to person, handling soiled items that have had contact with someone who has MRSA on their skin, by touching surfaces that have MRSA on them, medical devices (feeding tubes, blood pressure cuffs etc.).

The signs of MRSA are –

- ⇒ If it has entered a wound (or similar) there could be – redness, swelling, warmth, pain, pus
- ⇒ As it enters the body further, it can cause fever with high temperature, chills, dizziness, aches and pains, states of confusion.



High levels of handwashing are vital (also encouraging service users / customers to do so) when trying to prevent the spread of MRSA. An up to date risk assessment would be required for heightened cleaning schedules.

In some cases, infected people (with open wounds) may be “barrier nursed” and kept in isolation.

## Norovirus (Winter Vomiting Bug)

As the name suggests, this infection is more common in Winter but it can be caught at any time of the year.

The most common symptoms include – suddenly feeling nauseous, stomach cramps, projectile vomiting, diarrhoea, headache, fever, and aching bones and limbs.

There is no specific treatment (unless other complications have arisen) so the person would need to keep rehydrated (more water than usual) and avoid fizzy or acidic drinks.



As it is highly infectious it is important to remember that norovirus can be spread –

- ⇒ Through person to person contact
- ⇒ By breathing in particles from an infected person as it can be air borne
- ⇒ Touching contaminated surfaces (norovirus can survive a long time when conditions are right)
- ⇒ Eating contaminated food

Large outbreaks may occur when a lot of people are in close proximity to each other (for example, hospitals, care homes etc.).

### Norovirus: all you need to know to prepare

From: Public Health England Published: 19<sup>th</sup> October 2017

As winter approaches, Public Health England (PHE) issues advice on how to avoid getting norovirus and what to do if you become unwell.

Norovirus is an unpleasant vomiting bug that usually lasts about 2 days. There's not much that can be done to treat it but there are ways to reduce the risk of passing it on to those around you.

It is highly contagious and so it's important to practice good hygiene by thoroughly washing hands with soap and warm water, staying away from places like hospitals and care homes and avoiding preparing food or having close contact with others when ill to limit the spread of norovirus, which causes unpleasant, but short lived, vomiting and diarrhoea.

Nick Phin, National Infection Service Deputy Director, PHE said – “Norovirus can be unpleasant and is easily passed on to those around you. Most people get over it within a day or 2 but, in the very young, elderly or those who have weakened immune systems, it can last longer and it is easy to get

dehydrated, so it is important to drink plenty of fluids to prevent this.

*It is transmitted by touching hands or surfaces that the virus has landed on. All surfaces should be thoroughly disinfected after any episode of illness.*

*Those who have diarrhoea and vomiting should not prepare food until 48 hours after symptoms have disappeared. We advise that they should avoid visiting GP surgeries, care homes and hospitals if they have symptoms. If anyone has symptoms and is concerned they should contact NHS 111 or talk to their GP by phone.”*

One of the best ways to protect against norovirus and to help prevent infection is by practicing good hygiene. This includes thorough hand washing with soap and warm water especially after using the toilet and before eating or preparing food.

Symptoms of norovirus include sudden onset of nausea, projectile vomiting, diarrhoea and abdominal pain. Illness typically lasts about 24 to 48 hours.



## Tinea (Ringworm, Athlete's Foot etc.)

Tinea is the name of a group of diseases caused by a fungus, of which ringworm is probably the most common. Other types of Tinea include athlete's foot and jock itch. These infections are usually not serious, but they can be uncomfortable. You can get them by touching an infected person, from damp surfaces such as shower floors, or even from a pet.



Tinea affects the skin in various areas –

- ⇒ **On the skin** – a ring-like red or silvery rash. The skin will look red and irritated around the ring, but healthy inside. It can also be scaly, itchy and the skin inflamed
- ⇒ **On the face and neck** – might not appear ring-shaped, but can be itchy and swollen. It may become dry and crusted. If a person has a beard, they might notice patches of hair breaking away
- ⇒ **On the hands** – can cause the skin to become thicker on the palm and in between the fingers. It can affect one hand or both and normally only appears on one side.
- ⇒ **The scalp** – small patches of scaly skin on the scalp which might be sore. There could also be patchy hair loss and the scalp might be itchy (in severe cases large inflamed sores might be present that can ooze pus).
- ⇒ **On the foot (athlete's foot)** - itchy, dry, flaky and red rash usually between the toes. There might be blisters that can ooze and become crusty. There may also be scaling patterns on the sole, between the toes and on the side of the foot.
- ⇒ **On the groin (jock itch)** – red/brown sores that might have blisters or pores filled with pus. There might be itchy or red areas around the groin area (inner thighs and bottom – the genital area is not usually affected). There might also be scaly and flaky skin on the inner thighs.

These fungi can survive for months on skin, on combs, in towels (and various other household objects). They also survive in soil. They thrive in moisture and heat (this is why athletes' foot is often passed on at swimming pools).

The main ways that this fungi can be passed on are by contact with infected people, animals or objects. It is even possible to catch through contact with contaminated soil.

Usually Tinea infections are treated with anti-fungal products. These include: creams, shampoo, sprays, gel, tablets (usually for two weeks). Infected people should thoroughly dry themselves after bathing etc. and consider frequent cleaning of bedding etc.

## Scabies

Scabies is caused by small mites that “burrow” into the skin. They cause extreme itching which is often worse at night.

They feed by using their mouths and front legs to burrow within the outer layer of skin (epidermis) and this is where they lay their eggs.

After three to four days the eggs (larvae) hatch and move to the skin’s surface where they become adults.



Scabies mites prefer warm places (skin folds, between the fingers, under fingernails, or around the buttock or breast creases). They can also hide under watch straps, bracelets or rings.

Scabies are usually spread through prolonged skin to skin contact (including sexual intercourse). They can be spread (though not as common) through sharing bedding, clothing and towels of an infected person.

Outbreaks of scabies are more common in places where lots of people are together (for example, hospitals, schools and care homes).

Treatment will include a specialist cream that will be reapplied a week after the first application.

All bedding and clothing needs to be washed at high temperatures and the environment will need deep cleaning too.

If people infected with scabies live with others, everyone will need to be treated, whether or not they show signs of infection.

# Legionella

Legionnaire's disease is a potentially fatal type of pneumonia that can be found in water.

It can be contracted by breathing in (inhaling) airborne water droplets containing Legionella bacteria. These droplets can be formed by hot and cold water outlets; atomisers; wet air conditioning plant; and whirlpool or hydrotherapy baths.

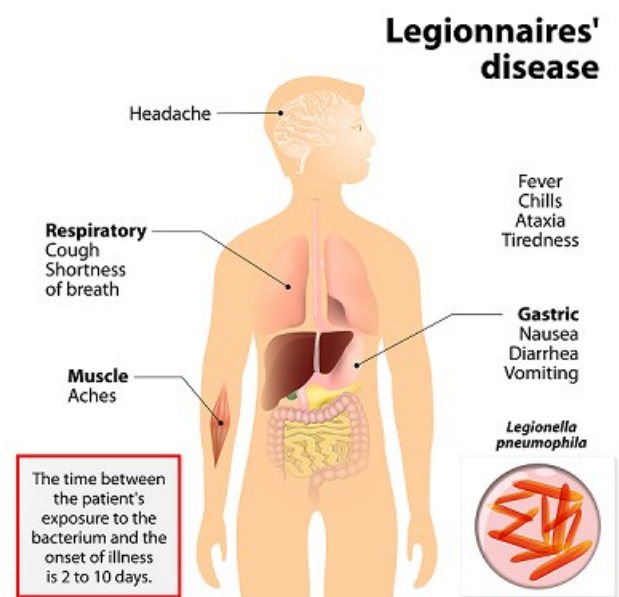
The bacteria can multiply in temperatures between 20°C and 45°C.

If the temperature is below 20°C the bacteria remain dormant and if the temperature is above 60°C they will not survive.

Water temperature control is the primary method to control the risk.

For this, the HSE (UK Health and Safety Executive) state that –

- ⇒ Hot water storage cylinders (calorifiers) should store water at 60°C or higher
- ⇒ Hot water should be distributed at 50°C or higher (thermostatic mixer valves need to be fitted as close as possible to outlets, where a scald risk is identified).
- ⇒ Cold water should be stored and distributed below 20°C





# The chain of infection

## What is the “chain of infection”?

For infectious diseases to spread, the chain of infection will be completed. There are six “links” for the chain of infection to be successful –

**Link 1: Infectious agent** – this is the harmful pathogen, germ etc. that can cause the infection, illness or even disease.

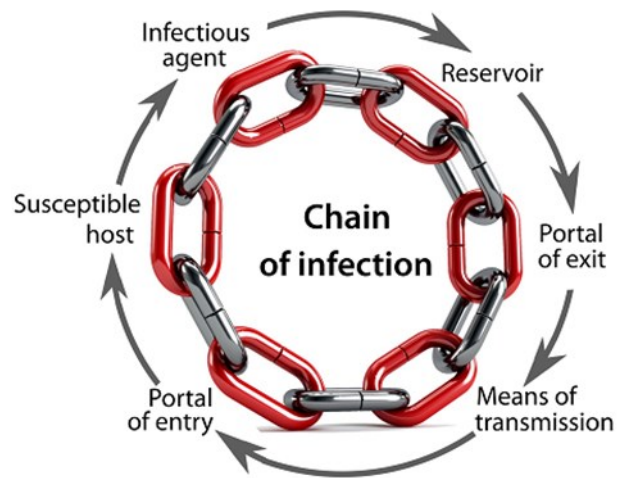
**Link 2: Reservoir** – This is the place where the pathogens live and then multiply. Some people misinterpret the word reservoir as meaning water. This is incorrect as, although the reservoir can be water, it can also be the person or animal (host) or soil. It is important to remember a reservoir can also be anywhere within the environment.

**Link 3: Portal of Exit** – This is where the pathogen can leave the reservoir. The most obvious is when an infected person sneezes. Pathogens within their lungs are expelled at high speed and can then reach a new host. Exits can also be from a open wounds. Another example could be if an infected person has used a toilet and put the seat down. If someone uses the toilet after them and touches the lid – some of the germs could then transfer to their hand.

**Link 4: Means of transmission** – This is how germs move from one place to another. Transmission could be person to person, person to equipment, being air borne (influenza pathogens can stay air borne for quite some time meaning that other people can inhale them).

**Link 5: Portal of Entry** – This is where the germs have found a new potential host. They can enter the new host via broken skin, inhalation, ingestion (eating), or contact with the eyes nose and mouth. It could also be via medical equipment (for example, catheters, breathing equipment etc.).

**Link 6: Susceptible Host** – This is where the germs have entered the new host. Whether the germs will successfully make the new host ill depends on their health etc. A healthy person may have a sufficiently strong immune system to fight off the germs. For people with a lower level or suppressed immune system, the germs may be successful.



It is important to remember those who are more at risk –

- ⇒ **Pregnant Women** – when pregnant, the immune system changes making pregnant women more susceptible to some infections. Harmful bacteria could pass through the placenta and enter the unborn baby, whose immune system is not properly developed.
- ⇒ **Older People** – as people age, their immune system becomes less effective so they cannot rid the body of harmful pathogens. They may also have other chronic medical conditions.
- ⇒ **Children** – as their immune systems are still developing they are at a higher risk.
- ⇒ **People whose immune systems have been weakened by disease or medical treatment** – (this can include cancer patients, people with diabetes, people with HIV etc.) as a healthy immune system should be able to combat harmful pathogens etc., whereas a weakened one may be unable to do so.
- ⇒ **People in hospital** – these are in hospital for other medical conditions so may be on other medication that can affect the immune system (or the reason that they had been admitted to hospital).

## How can the “chain of infection” be broken?

If one of the links from the chain is removed then infections can be prevented.

For example, if infection prevention measures (covered in the next section) are good enough, they can break the link between the portal of exit and portal of entry.

Some links are easier to break than others.

It is easier to prevent a pathogen from entering a new potential host than it is to stop one leaving an infected person.



## Preventative measures

### Staff hygiene and health

It is important to remember that if a member of staff has any illness symptoms (runny nose, upset stomach, skin rash etc.) they should consult with their manager before going to work.

If the staff member has had sickness and diarrhoea they should not go to work and should not return until they have been free of symptoms for at least 48 hours.



All staff should aspire to high levels of personal hygiene, especially those working with particularly susceptible individuals such as the elderly or children.

It is considered that daily washing, bathing and/or showering should remove most of the microorganisms on their skin.

When people hear the phrase “Hand Hygiene”, they immediately think it means hand washing – this is only part of it.

In settings where staff come into contact with vulnerable individuals (e.g. in care homes or hospitals), hand hygiene also includes making sure that finger nails are kept short (and not sharp) and do not have nail polish on them (false nails should never be worn to work either). The only ring that should be worn is a plain wedding band. Bracelets and watches should not be worn as they can harbour pathogens underneath them.

In these settings, it is particularly important that clothes worn for work are changed daily (with clean clothes). They should be washed at a high temperature, tumble dried (if possible) and then ironed (to kill any possible pathogens).

We will cover PPE (personal protective equipment) shortly, but where this is provided, it should always be worn for the relevant tasks.

If a member of staff has a graze or a cut, it should be covered with a waterproof dressing.

It is also encouraged for people to use a good quality hand cream and good soaps to help to protect the skin.

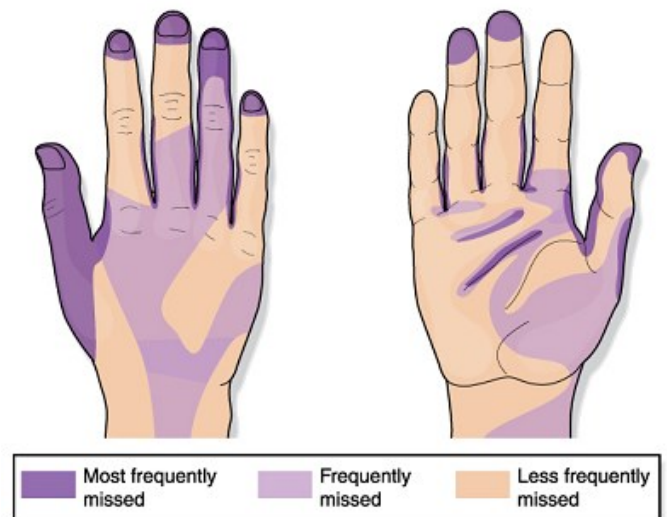
## Hand Washing

The World Health Organization launched “Five Moments for hand hygiene” – when health and social care workers should wash and clean their hands. This concentrates on the particular five instances when handwashing is crucial to help control infection in healthcare settings.

These are –

- ⇒ Before patient contact
- ⇒ Before an aseptic task
- ⇒ After risk of exposure to body fluids
- ⇒ After patient contact
- ⇒ After contact with patient surroundings.

The spread of COVID-19 has highlighted the vital role of frequent and effective hand washing. Unfortunately, it is easy to miss areas of that hand when washing so it is important to be methodical.



Handwashing is one of the best ways to prevent the spread of bacteria, thus protecting people with low immune systems who could then become ill.

The five instances listed above are certainly not the only important times when we should wash our hands. Others include –

- ⇒ When entering a food preparation / handling area (after a break, going to the toilet etc.)
- ⇒ Prior to any food preparation
- ⇒ After touching raw food (meat, poultry, fish, eggs, unwashed fruit and vegetables)
- ⇒ Following the handling of food waste and emptying bins
- ⇒ After cleaning
- ⇒ After blowing the nose
- ⇒ After touching “frequently used” items (light switches, door handles etc.)

To wash your hands properly, you need to make sure you clean all surfaces of the hand. The image below gives you an idea of the best way to do this –

**Step 1** – rub your palms together to create a good lather.



**Step 2** – interlace your fingers, remember to do both hands!



**Step 3** – grab each wrist in turn and rotate.



**Step 4** – grab each thumb in turn and rotate.



**Step 5** – rub your fingertips against the palm of the other hand.

Rinse your hands thoroughly and turn the tap off using your elbow. If this is not possible, use a tissue to turn off the tap and then discard it.

It is important to remember that after washing your hands you have to dry them as infections can be spread more easily if the hands are wet.

For this drying, use a disposable paper towel rather than a hot air dryer if possible.

It is also important to remember that washing the hands with soap and water will only remove dirt and germs from the hands but not kill them.

Using cleaning materials that are designed for hand washing with the intent of killing most bacteria is best.



## Personal Protective Equipment

Where the health and safety of staff is at risk and “protective” equipment is required, the employer legally has to provide the correct PPE. PPE can be items like – safety helmets and hard hats, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses, masks, aprons etc.



With regards to infection prevention and control, all staff in high risk settings should be provided with appropriate PPE to reduce the risk of infection (catching and passing on).

Within high-risk settings such as health and social care, the main PPE that is provided is –

- ⇒ Single use gloves
- ⇒ Disposable aprons
- ⇒ Eye protection
- ⇒ Face protection (where the risk shows that fluids could splash into someone’s face)
- ⇒ Masks (where there is a risk of breathing in harmful microorganisms)

It is important to remember that aprons reduce the risks of clothes becoming contaminated. It is also important to remember that gloves are not a substitute for proper hand washing.

Never store “clean” disposable gloves in pockets.



# Waste management

It is essential to have specific procedures in place for the management of waste to reduce the risk of infection (and accidents).

In high-risk settings, such as hospitals and care homes, there has to be a comprehensive policy in place regarding waste management that all staff should know.



It should include (the list isn't exhaustive) –

- ⇒ Correct segregation of waste
- ⇒ Correct labelling of waste
- ⇒ Storage of waste
- ⇒ Correct disposal (relevant contractors etc.)
- ⇒ It is imperative when handling waste the appropriate PPE is worn
- ⇒ Waste bags should not be overfilled (ideally  $\frac{3}{4}$  full) – as this can lead to the bags splitting and increasing the potential for infections being transferred

## Clinical waste









This includes any items contaminated with bodily fluids (faeces, blood, urine etc.) and human tissue. This could be on used dressings, PPE.

Clinical waste should be placed in (usually) yellow clinical waste bags and then stored in the clinical waste container (awaiting collection).

## Hazardous Waste...

There may be different types of hazardous waste. There are specific regulations on how they are removed.

The following is from “The Department for Health - Environment and sustainability Health Technical Memorandum 07-01: Safe management of healthcare waste” – it shows the colour coding used in the UK for disposal –

Colour	Description
 Yellow	<b>Waste which requires disposal by incineration</b> Indicative treatment/disposal required is <b>incineration</b> in a suitably permitted or licensed facility.
 Orange	<b>Waste which may be “treated”</b> Indicative treatment/disposal required is to be “rendered safe” in a suitably permitted or licensed facility, <b>usually alternative treatment plants (ATPs). However this waste may also be disposed of by incineration.</b>
 Purple	<b>Cytotoxic and cytostatic waste</b> Indicative treatment/disposal required is <b>incineration</b> in a suitably permitted or licensed facility.
 Yellow/black	<b>Offensive/hygiene waste*</b> Indicative treatment/disposal required is <b>landfill</b> or municipal <b>incineration/energy from waste</b> at a suitably permitted or licensed facility.
 Red	<b>Anatomical waste for incineration<sup>1</sup></b> Indicative treatment/disposal required is <b>incineration</b> in a suitably permitted facility.
 Black	<b>Domestic (municipal) waste</b> Minimum treatment/disposal required is <b>landfill</b> , municipal <b>incineration/energy from waste</b> or other municipal <b>waste treatment process</b> at a suitably permitted or licensed facility. Recyclable components should be removed through segregation. Clear/opaque receptacles may also be used for domestic waste.
 Blue	<b>Medicinal waste for incineration<sup>1</sup></b> Indicative treatment/disposal required is <b>incineration</b> in a suitably permitted facility.
 white	<b>Amalgam waste</b> For recovery

\* The use of yellow/black for offensive/hygiene waste was chosen as these colours have historically been universally used for the sanitary/offensive/hygiene waste stream.

1. The colours “red” and “blue” are new to the colour-coding system in this edition. Care should be taken when ordering red containers to ensure that they can be clearly differentiated from orange. The colour-coding could be agreed as part of a contract specification.

## Management of blood and body fluid spillages

As these are a high source of potential infection people need to protect themselves to the highest possible level.

Should you encounter a spillage of blood or bodily fluid, immediately put a warning sign in front of the blood if one is available. This should prevent people entering the area until the spillage has been removed.



The person dealing with the spillage should put on a disposable apron and disposable gloves and initially cover the blood in paper towels.

In high risk environments, blood spillage kits will ideally be available. These typically contain –

- ⇒ Additional PPE
- ⇒ Hypochlorite super-absorbent powder
- ⇒ Disinfectant (usually a tablet)
- ⇒ Scoop and scraper
- ⇒ Masks (where there is a risk of breathing in harmful microorganisms)
- ⇒ Paper towel
- ⇒ Instruction leaflet
- ⇒ Clinical waste bag

Instructions are usually a variant of the following –

1. Open the nearest window
2. Check the expiry date and COSHH information
3. Sprinkle the hypochlorite powder over the blood (and then leave it for a couple of minutes)
4. After the two minutes, use the scraper and the scoop, to carefully collect the resulting mixture and dispose of it in the clinical waste bag
5. Use disinfectant to clean over the area where the blood had been
6. Put the caution wet floor sign in the correct place
7. Dispose of the apron and gloves into the clinical waste bag and place the clinical waste bag in a clinical waste container
8. Wash hands using the correct hand washing technique

It is important to remember that once a spillage kit has been used, the items that have been used need to be replaced immediately. If there are any liquids left, they need to be disposed of following the manufacturer's instructions.

## Management of sharps

The employer has the responsibility to provide the correct equipment regarding sharps to reduce the risk of injury (and infection).

There are several important rules to follow when dealing with used sharps –

- ⇒ Sharps should be disposed of immediately after they have been used. Sharps bins are usually provided by a pharmacy; they are the people who should collect and dispose of a full bin.
- ⇒ Sharps bins must not be filled past the “full” line on the bin.
- ⇒ The sharps bin should have a temporary closure mechanism for when they are not in use – this needs to be implemented when the bin is not in use.
- ⇒ Sharps bin should be stored in a safe place where other people cannot access them.
- ⇒ Sharps must not be handled more than is essential.
- ⇒ Where needle-free equipment is available, this should in preference over needles.
- ⇒ Sharps should only be used for exactly for their intended purpose.
- ⇒ Do not put the protective covering back on the sharp prior to disposal.
- ⇒ Sharps should not be bent or broken.
- ⇒ Needles and syringes should not be separated before disposal.
- ⇒ Used sharps bins need to be replaced immediately. If there are any liquids left, they need to be disposed of following the manufacturer’s instructions.



## Sharps injuries

Sharps injuries can be quite frightening.

Following is a basic guide of what should be done following a sharps injury –

- ⇒ **Bleed** – boost blood flow by squeezing it under running water (never suck the wound)
- ⇒ **Wash** – wash the wound thoroughly and then dry it
- ⇒ **Cover** – with a waterproof dressing
- ⇒ **Report** – It will need reporting to the relevant manager who will have to complete the relevant documentation and offer advice
- ⇒ **Seek Advice** – Usually from a doctor but in the UK, it may be an NHS drop in centre or a hospital A&E department etc.



This is the end of Whitehall Training's short **Infection Prevention and Control** course.

Expanded online versions of this training, complete with exam and certificate, are available from the Whitehall Training website – [www.whitehalltraining.com](http://www.whitehalltraining.com).

**Infection Prevention & Control for Health & Social Care** - more info click [\[here\]](#)

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