



# **Safety**

## **Covering:**

**HLTWHS002 Follow safe work practices for direct client care**

**HLTINF001 Comply with infection prevention and control policies and procedures**

## **Reference Materials**

© St John Ambulance Australia 2020

This publication is copyright. Apart from fair dealings for purposes of private study, criticism or review, as permitted under the Copyright Act, no part may be reproduced by any process without written permission.

All enquiries about this participant reference guide should be directed to:

National Training Manager  
St John Ambulance Australia  
PO Box 292  
Deakin West ACT 2600  
Email: [training@stjohn.org.au](mailto:training@stjohn.org.au)

# Contents

Introduction .....	4
Workplace Health and Safety .....	4
Relevant WHS Act, Regulation and codes of practice .....	4
St John WHS Policies and Procedures .....	7
Workplace Health and Safety Training.....	7
Workplace Health and Safety Risk Management .....	8
Fatigue .....	13
Signs and Symptoms of Fatigue .....	14
Manual Handling .....	16
Musculoskeletal System .....	17
Things to consider .....	17
Principles for lifting.....	18
Equipment .....	20
St John Ambulance Australia Patient Charter .....	22
Emergency Evacuation Procedures.....	23
Infection Prevention .....	24
Basis of Infection.....	24
Chain of Infection.....	25
Personal protective equipment (PPE) .....	27

## Introduction

These reference materials are provided to assist you in completing the Safety workbook. Refer to the workbook for details of the assessment activities you are required to complete in the workbook.

## Workplace Health and Safety

### Relevant WHS Act, Regulation and codes of practice

Each State and Territory Parliament has established a Workplace Health and Safety Act, although most use the national model WHS legislation so there is now some commonality in the acts. The objective of the Acts is to prevent anyone being killed, injured or contracting illness in a workplace.

Each State and Territory Parliament has also established a Workplace Health and Safety Regulation, although most use the national model WHS regulation so there is now some commonality in the regulations. The regulations set out more detailed requirements to support the duties in the WHS Act.

Codes of practice are practical guides to achieving the standards of health, safety and welfare required under the WHS Act and the WHS Regulations.

For details of the Workplace Health and Safety Act in your State or Territory, go to the appropriate website below.

National	<a href="http://safeworkaustralia.gov.au/">http://safeworkaustralia.gov.au/</a> Safe Work Australia is the new national authority which develops model Acts, regulations and guidelines for adoption across Australia.
ACT	<a href="https://www.worksafe.act.gov.au/">https://www.worksafe.act.gov.au/</a> This page provides links to ACT legislation, regulations and codes of practice.
NSW	<a href="https://www.safework.nsw.gov.au/">https://www.safework.nsw.gov.au/</a> Look under Legal Obligations
Northern Territory	<a href="http://www.worksafe.nt.gov.au/">http://www.worksafe.nt.gov.au/</a> Choose Legislation and Codes of Practice on left hand menu.
Queensland	<a href="https://www.worksafe.qld.gov.au/">https://www.worksafe.qld.gov.au/</a> This page provides links to the Queensland Act, Regulations etc.
South Australia	<a href="http://www.safework.sa.gov.au/">http://www.safework.sa.gov.au/</a> Look under resources for SA Legislation
Tasmania	<a href="https://www.worksafe.tas.gov.au/">https://www.worksafe.tas.gov.au/</a> This page provides links to Tasmanian Acts and Regulations etc.
Victoria	<a href="http://www.worksafe.vic.gov.au">www.worksafe.vic.gov.au</a> This page provides links to all the Victorian Acts, Codes of Practice etc.
Western Australia	<a href="https://www.commerce.wa.gov.au/worksafe/">https://www.commerce.wa.gov.au/worksafe/</a> This page provides links to all the Western Australia Acts, Codes, Guidance etc.

Employers have a responsibility for workplace health and safety (WHS), as required by government legislation. This includes providing:

- safe access to and from the workplace
- safe buildings, equipment and ways of working
- information, training and supervision for team members
- protection for the health and safety of others
- consulting employees about WHS
- keeping of health and safety records

For example, team leaders must train and supervise their team members in wearing personal protective equipment (PPE). The team leader must make sure team members wear the proper equipment and discipline any team member who does not.

Employees also have responsibilities defined under WHS legislation, including:

- do their work without endangering their own or anyone else's health or safety
- not interfere with or misuse anything provided in the interests of health and safety
- identify and report hazards and contribute to how they are managed
- follow workplace health and safety policies and procedures. For example, employees must wear personal protective equipment (PPE) if it is provided for the job. An employee who does not wear it can be prosecuted.

Under WHS legislation, employers must consult with employees about workplace health and safety. Consulting with employees:

- provides an opportunity for finding better solutions to workplace health and safety issues
- improves overall relations between team members
- facilitates the implementation process regarding business decisions.

Workplace Health and Safety legislation imposes a duty of care responsibility on employees and employers. A duty of care is a legal obligation to take reasonable steps to not cause foreseeable harm to another person or their property,

There are many ways that consultation can occur in your organisation. You should check the relevant WHS legislation in your State or Territory which might prescribe that you must have a WHS committee or WHS representative. Here is a list of some of the consultation mechanisms that are used within workplaces:

- **Management meetings** — where WHS is discussed and acted on.
- **WHS committees** — where representatives of the employees and management regularly meet to discuss and recommend WHS action.
- **WHS representatives** — who fulfil the role of WHS committees in smaller workplaces.

- **Team/Unit meetings** — informal meetings held within a unit/team when a need arises. These meetings can be used for discussion of issues and to provide information about safety issues. Good management is placing WHS on the agenda for each meeting.
- **Employee feedback** — employee surveys and suggestion boxes can be used to let management know what is happening and to give feedback.
- **Information provision** — feedback and providing WHS information to employees through flyers, circulars, website or intranet pages, notice boards and video announcements.

Industries may also set standards that all organisations in that industry must follow. In the Health industry, organisations must follow the *Australian Guidelines for the Prevention and Control of Infection in Health Care*, available from the NHMRC website: <https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019>

## St John WHS Policies and Procedures

Employees and volunteers should be aware of St John Workplace Health and Safety policies and procedures that apply to them. These are defined in St John States and Territories, as they must comply with State/Territory WHS legislation.

Employees must be aware of the specific procedures that apply to their position. For example, a procedure on cleaning manikins only applies to staff that are involved in cleaning manikins. Employees should be aware of WHS training available to them.

Employees should be aware of how they can contribute to WHS matters. For example, they have identified a hazard and want to report it. The most common methods for doing this in St John are for them to raise it at a team meeting or direct to their supervisor.

## Workplace Health and Safety Training

St John currently provides a range of WHS training, including:

- Use of gloves and other PPE
- Manual Handling

This training is provided when a member first joins the organisation and through annual retraining.

However, the need for additional WHS training may emerge. Some mechanisms for identifying WHS training needs include:

- a training matrix (identifies WHS skills required for employees and their respective job position)
- job safety analyses (includes training and competency for each task)
- specific hazard risk assessments (e.g. manual handling-safe lifting technique training)
- WHS audit
- legislation requirements (e.g. plant operator certification)
- investigation of incidents.

Once the need for training has been identified, there are a variety of strategies for addressing the need, including:

- Classroom training (send the off to an appropriate course)
- One on one training
- Ongoing supervision and observation
- Coaching
- Providing information on the correct procedure

The solution might involve a combination of these strategies.

It is important to keep employees up-to-date with safe work practices. For example, ensuring any changes in codes of practice are identified and practices updated. Information from Safework organisations provide current information about safe work practices.

## Workplace Health and Safety Risk Management

WHS risk management is a system that allows workplaces to identify & control workplace health & safety issues. Risk management is critical for member welfare and an important part of St John service delivery.

### Key Definitions

When thinking about risk management, it is important to consider the definition of key components:

- Hazard – something that can cause an adverse effect
- Risk – the likelihood and possible consequences of exposure to a hazard
- Identification vs Assessment – finding a hazard versus thinking about it's impact
- Mitigation vs Elimination – reduction versus removal

Risk assessment involves careful examination of the hazards in a workplace & the factors involved. It may include the type of hazard, equipment, training, operations &



systems in place to control hazards. Risk assessment is the process of determining the level of risk created by the hazard.

### **Risk Management Process**

The main elements of risk management are:

- Establish the context
- Identify risks
- Analyse the risk
- Evaluate the risk
- Control risks
- Monitor & review
- Communicate & consult

The benefits of implementing WHS risk management include:

- A safer workplace that is reflected by a decline in accidents, injuries, illness and fatalities.
- Increased morale arising from less accidents and injuries
- Reduction in down-time & fewer stoppages as a result of WHS incidents
- Lower insurance premiums & excess payments
- Higher productivity

Risk management is inherent in all aspects of St John services delivery.

### **Identifying Risks**

All employees should be aware of and involved in hazard identification. Identifying hazards should be a systematic, planned process that enables workplace hazards to be identified in a logical, structured manner (e.g. safety audits, incident/accident investigations, injury & illness records). However, hazards may also be identified through less systematic means such as internal or external complaints or observations from employees.

A hazard is anything (including work practices or procedures) that has the potential to harm the health or safety of a person. All staff have a responsibility to identify hazards, report them and contribute to their appropriate management.

Hazards may be identified in classrooms, offices, meeting rooms, vehicles as well as at events.

Some examples of hazards include:

Physical	Noise, vibration, temperature, electrical, pressure, falling or moving objects, equipment malfunction/problems, lighting.
Chemical/substances	Fumes, liquids, gases, vapours, fibre.
Biological	Viruses, bacteria, parasites.
Ergonomic	Work are layout, equipment design, instrument layout, manual handling.
Psychological	Workload, shift arrangements, workplace relationships, harassment, discrimination.
Radiation	Ultraviolet exposure from sun or welding, infrared from drying or heating processes.

When considering risk, a **near miss** should be considered along with hazards. A **near miss** is an unplanned event that threatens human safety or health.

### **Analysing Risk**

When assessing the level of risk, consider:

- Identifying the consequences and severity of outcomes – the number of persons harmed and the nature of their injury/illness
- Determining the exposure – how often (frequency), how long (duration) & to what extent the affected persons are exposed to the particular hazard
- Determining individual reactions to certain hazards – how the hazard affects the employees who are exposed to them
- Estimating the likelihood that it will happen – the effectiveness of any existing risk control measures will need to be included in estimating the likelihood

## Evaluating Risks

The matrix below is a commonly used model for evaluating and representing risks. This format shows the severity (A) and the likelihood (B) of someone being injured.

### RISK OF BEING INJURED

A. How severely could it hurt someone?	B. How likely is it to occur?			
	Very likely	Likely	Unlikely	Very unlikely
Kill or cause permanent disability or ill health	1	1	2	3
Long term illness or serious injury	1	2	3	4
Medical attention and several days off work	2	3	4	5
First aid needed	3	4	5	6

In this table, the level of risk acceptability is rated from 1 (unacceptable, red) to 6 (acceptable, green).

Risk mitigation strategies should be devised and implemented to reduce the severity and/or the likelihood of the risk to an acceptable level.

Regulations require the employer to eliminate the risk or where elimination is not reasonably practicable an obligation exists to minimise the risk to the lowest level reasonably practicable.

## Controlling the risks

Employees can contribute to the control of hazards by implementing one or more of the following strategies for managing hazards.

The following range of risk control measures should be considered. Known as the "hierarchy of hazard control", these are listed in priority order i.e. the most effective is listed first, with less effective options listed lower. The highest practical levels of risk control should be chosen. A combination of higher and lower level risk controls is usually desirable.

## Hierarchy of hazard control

1. **Eliminate** the hazard or task if the risks outweigh the potential benefits.
2. **Substitute** the hazard with something less hazardous e.g. substitute a toxic substance with another that is non-toxic.
3. **Isolate** the hazard by using barriers or distance e.g. put insulation around noisy equipment.
4. **Use engineering controls**, such as local exhaust ventilation to remove dust/fumes, or automate the process.
5. Making **administrative changes** e.g.
  - a. **Rearrange the work area and work flow** e.g. have deliveries made to the end-point to avoid re-handling, intersperse repetitive activity with different tasks to avoid overuse injuries etc.
  - b. **Establish safe work practices**, such as restricting access to the area, keeping the area free of clutter, being prepared for emergencies e.g., spills, and prepare and use safe work method statements for hazardous tasks.
  - c. Provide **training and supervision** appropriate to the level of expertise of the personnel involved. As a minimum, this would include familiarisation with local hazards and their control, safe work methods and emergency procedures.
6. Wear **personal protective equipment** such as robust footwear, gloves, laboratory coats, safety glasses, ear plugs/muffs, dust masks etc.

The chosen risk control measures should be implemented as soon as possible. The person responsible for implementing the risk control measures should inform those who were consulted during the decision making process about any subsequent changes to plans and progress towards completion.

## Fatigue

In many ways, fatigue is like any other medical condition or physical injury. First, we need to know it exists and then think about it. Next we need to know the signs and symptoms before we can recognise it. Finally, we need to know how to manage it and the only cure for fatigue is sleep. Like any complex medical presentation the trigger may not be simple to overcome or a cure easily accessible, so we need to prevent fatigue where possible and have systems and resources in place to minimise until we can sleep.

Fatigue means different things to different people and ranges from feeling tired to falling asleep. We will discuss how to recognise the signs and symptoms of fatigue later but first it is important to start with a common understanding and definition. One definition, used in the Queensland Health Fatigue Risk Management System, defines fatigue as:

A decreased capacity to perform mental or physical work, or the subjective state in which one can no longer perform a task. Fatigue manifests in physiological performance decrements and cognitive impairment. Fatigue primarily arises as a result of inadequate restorative sleep, but is also influenced by time of day and prior wake.

In practice, this means that our ability to do our work safely is dependent on how long we have been working for, what time of the day it is and how much sleep we've had in the preceding days. Shift workers are often more tolerant of changes in work routine but studies have shown that fatigue peaks in the early hours of the morning, regardless of profession. This means that we all need to take this seriously and all lead by example.

## Signs and Symptoms of Fatigue

Fatigue manifests in different ways and it is helpful to consider these as signs (that we can see) and symptoms (that we feel).

### Signs & Symptoms

Yawning  
Head drooping  
Heavy eyelids  
Eye-rubbing  
Involuntary sleep  
Quiet and withdrawn  
Lethargy  
Lacking motivation  
Irritable or bad temper

### Performance

Difficulty concentrating  
Decreased awareness  
Slowed reaction time  
Impaired coordination  
Clinical errors  
Poor communication  
Memory lapses  
Impaired decision-making

## Strategies to combat fatigue

Rostering to minimise fatigue is important in trying to ensure employees are not impacted by fatigue. The following should be taken into account when rostering employees for work:

Actual Length of Shift	Level of Risk	Actual Time Off Before or Between Shifts
< 10 hours	LOW	> 12 hours
10 – 12 hours	MODERATE	10 – 12 hours
12 – 16 hours	HIGH	8 – 10 hours
> 16 hours	VERY HIGH	< 8 hours

Adapted from QH FRMS

When considering actual shift length and time off in a consecutive 24 hours period, it is important that we also consider:

- Travel time to and from the activity
- Activity timing (e.g. overnight, early morning starts)
- Other personal and work commitments, in addition to St John shift
- Cumulative effect of multi-day and residential deployments, especially where this involves overnight on-call
- Additional time spent by command team and support services preparing and cleaning up
- Whether everyone needs to be there for the entire event or can shifts be staggered?

Some strategies to provide temporary relief are listed below.

- “Power naps” – a quick sleep of between 15 and 30 minutes may provide a few hours of recharged energy but this should serve as a warning that it is time to start stopping
- Take a real break – making sure that you are not indispensable is a planning issue and involves having a good command team and being prepared to handover at short notice
- Caffeine – can provide short-term relief but may affect the quality of recovery sleep
- Practical options include:
  - safe rostering, including limiting shift length & splitting shifts
  - car pooling and/or use of buses for member transport
  - accommodation nearby for activities with long travel time
  - planned shift changeovers & travel during daylight hours
  - provision of rest space away from event workload
  - delegation of responsibilities within command team
  - roster members to perform specific logistical functions

## Manual Handling

Everybody has a responsibility to demonstrate appropriate manual handling techniques whilst at work or at home. The Australian Workers' Union website states around 40% of all compensable injuries, costing around \$28.5 million each year, are musculoskeletal and manual handling related.

Manual handling training for any given workplace can be a course in its own right and is something that is practiced every day, in every situation whether at home or at work, from lifting a chair to moving a large quantity of soil in the garden.

This topic will cover information on what is manual handling and how to correctly manual handle. It is important that you do this when you are fit and able in order to prevent any injury to yourself or other member's involved.

### **Definition**

Manual handling can be defined as any activity that requires you to use your body (musculoskeletal system specifically) in performing your work.

This may include any task that involves;

- Lifting/lowering
- Pushing/pulling
- Carrying
- And otherwise moving or restraining any person, animal or item

Given the nature of work undertaken by those that provide first aid in any of its forms it is also deemed as high risk (of sustaining an injury). There are many factors working to make it high risk but the very act of handling people is enough according to the Australian Worker's Union website (accessed 14th August 2011).



## Musculoskeletal System

The musculoskeletal system includes the following:

- Bones that are rigid organs that make up the human skeleton.
- Joints are structures that connect individual bones and may allow bones to move against each other to cause movement.
- Ligaments, a small band of dense, white, fibrous elastic tissue. Ligaments connect the ends of bones together in order to form a joint.
- Tendons, a tough band of fibrous connective tissue that usually connects muscle to bone and is capable of withstanding tension.
- Muscles, a soft tissue found in most animals.

Incorrect manual handling can lead damage to any of these components of the musculoskeletal system.

### Things to consider

Before lifting or moving either a piece of equipment or patient it is important to consider a number of factors including the following:

- Weight of object/patient
- personal safety
- physical surroundings
- available equipment
- available human resources
- nature of illness or injury
- the patient's ability to help move them

### Basic Techniques

When assessing for lifting and moving (manual handling) there are techniques that need to be discussed and assessed.

Related to all manual handling

- Never lift alone – by example, two people lifting an 80kg person are only lifting 40kg each – still a significant weight but much less than lifting by yourself
- Always plan the move – if you injure yourself in a poorly planned move you can also cause further injury to the patient and even prevent yourself from providing further assistance to them – don't become the patient

## Specific to Patients

- Patients can often assist themselves and the main exceptions to this are the unconscious patient or the patient with a spinal injury – even if a patient has a leg injury they may be able to assist in moving themselves rather than you having to do it all for them
- When lifting or moving a patient with others, co-ordinate your moves e.g. utilize instructions like “on the count of three we lift to a standing position”
- Always think about the position of the patient at the start and end if you have to lift e.g. if lifting from the ground onto a stretcher, make sure the stretcher is as close to the patient as practical and that the head end is at the head of the patient etc.

## Principles for lifting

Incorrect lifting techniques may result in serious injury to the member or the patient. Injuries from lifting and carrying are not always evident immediately and may result from cumulative strain from incorrect procedures over a period of time.

### **General principles**

The hazards associated with lifting are reduced with correct use of these principles:

- assess environment before lifting to ensure clear access
- assess the weight to be moved
- explain techniques to be used with all involved
- use lifting devices where available
- position both feet slightly apart to ensure stability and balance
- face the direction of proposed movement
- one person gives commands but all work as a team
- maintain normal back curves and bend at the hips and knees with maximum use of leg muscles
- lift the weight close to your centre of gravity, with arms close to the body and a firm grip
- keep head erect and chin in
- use less effort by using rolling, turning or pushing where possible, use body weight to create momentum and move forward as lift is made, use a patient sliding device for transfers where appropriate

## **Principles when moving patients**

The decision to move a patient and the method used is based on the patient's condition, injuries and any dangers that may exist. If you need to move the patient, the comfort and safety of all involved will be improved by an understanding of the nature and mechanics of the body.

The hazards associated with lifting are reduced with correct use of these principles:

- assess environment before lifting to ensure clear access
- assess the weight to be moved
- explain techniques to be used with all involved
- explain techniques to be used to the patient
- use lifting devices where available
- seek patient cooperation before proceeding
- position both feet slightly apart to ensure stability and balance
- face the direction of proposed movement
- one person gives commands but all work as a team
- maintain normal back curves and bend at the hips and knees with maximum use of leg muscles
- lift the weight close to your center of gravity, with arms close to the body and a firm grip
- keep head erect and chin in
- use less effort by using rolling, turning or pushing where possible, use body weight to create momentum and move forward as lift is made, use a patient sliding device for transfers where appropriate

## Equipment

### **Equipment for moving resources**

When moving first aid equipment or other resources e.g. tables etc. it is important to consider how you would move them safely and whether using lifting and moving equipment would assist. Below are some examples of lifting and moving equipment.

- Trolley
- Stair walker
- Hoist

### **Equipment for moving patients**

Stretchers – perfectly suited for moving patients around whether into a vehicle, hospital or simply within a first aid post. Stretchers usually have the capacity to be lowered and then raised once the patient has been secured which can also aid in lifting.

Scoop Stretchers – a lifting device that should be removed when the patient is placed on a standard stretcher. The stretcher enfolds and closes shut underneath a patient in the position in which they are found. In difficult maneuvering situations, the patient should be strapped to the stretcher.

Spine Board – designed to immobilize spinal injuries to maintain spinal alignment during lifting. They must be used in conjunction with another type of carrying stretcher.

Wheelchairs – are often used to move patients around and often we are called upon to move people into, or out of, them.

When lifting and moving patients we have to consider equipment 'attached' to the patient and how that may impact on how we lift or move them.

## **Loading patient onto a scoop stretcher**

1. Position patient:
  - arms against body
  - legs straight and together
  - no objects under casualty—empty hip pockets.
2. Prepare scoop stretcher:
  - unlock and extend stretcher to appropriate length
  - unlock end latch and open—scissors-like.
3. Carefully place scoop around and slide under patient.
4. Close stretcher and secure latch at head end.
5. Secure the patient to stretcher with straps.

## **Transferring a patient from scoop stretcher to an ambulance stretcher**

1. Prepare stretcher by positioning it:
  - close to patient
  - at appropriate height
  - with side rails, if any, lowered
  - with pillow removed.
2. Four operators squat: two each end of stretcher.
3. Select leader to coordinate lift. The leader should be positioned at patient's head.
4. Lift scoop stretcher with patient loaded. Use correct lifting technique.
5. Load scoop onto ambulance stretcher, ensuring the scoop stretcher is positioned evenly over the ambulance stretcher.
6. Remove scoop stretcher taking care to support patient's head and neck.
7. Secure patient to the ambulance stretcher.
8. Cover patient with a blanket.
9. Secure ambulance stretcher belts/harness.

# St John Ambulance Australia Patient Charter

As a patient you can expect:

- Best practice first aid care.
- Safety and comfort.
- Privacy legislation to be followed.
- To be treated with respect and dignity.
- To gain information about your first aid and ongoing care options.
- The right to ask for another opinion regarding your first aid care.
- To be provided with a record of your first aid care.

In return, as a patient you are responsible for:

- Providing, to the best of your knowledge, accurate health information to assist us in treating you.
- Asking questions if there is something you do not understand.
- Following instructions of St John personnel for the safety of yourself and others.
- Showing consideration for other patients and St John personnel and property.

St John personnel and patients are entitled to work and be cared for in a safe environment., so violence and verbal abuse will not be tolerated.

## Emergency Evacuation Procedures

The following is the typical content of an emergency building evacuation plan, to be used in the case of fire, bomb scare etc.

Safely stop your work

- Shut down equipment that could become unstable or present a hazard.
- Gather your personal belongings such as glasses, prescription medication, keys, purse.

Leave the building through the nearest door with an EXIT sign.

- Do not use elevators.
- Go to the nearest safe stairway.
- Touch closed doors before opening. If the surface is hot, do not open — use another exit route.
- Close, but do not lock, all doors as you leave.

Report to the designated assembly area

- Stay in your designated outdoor assembly area for a head count.
- Report any missing individuals and last known locations to emergency responders.

Wait for instructions from emergency responders

- Remain outside at your designated assembly area.
- Do not re-enter the building until authorised to do so by an appropriate authority (police, fire department, etc.).

## Infection Prevention

Infection prevention is the application of knowledge, policy and techniques to prevent, minimise or control the spread of infection. St John follows the NHMRC *Australian Guidelines for the Prevention and Control of Infection in Health Care*, as its procedures for infection control. It is available from the NHMRC website:

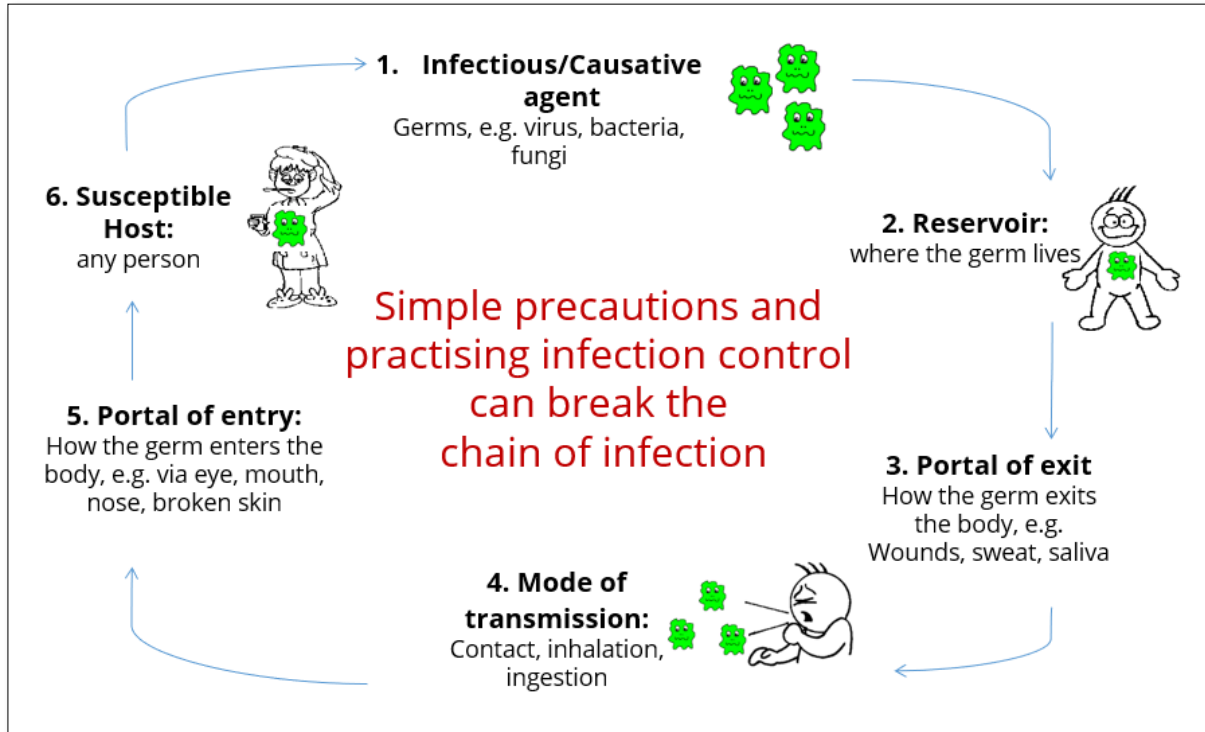
<https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019>

## Basis of Infection

Bacteria	A Single-celled micro-organism which can exist either as independent (free-living) organisms or as parasites (dependent upon another organism for life).
Bacteria spores	A bacteria that, because of its thick outer wall, is easily able to survive in hostile environments otherwise not conducive to bacterial growth and reproduction.
Fungi	A eukaryotic, thallus-forming organism that feeds by absorbing organic molecules from its surroundings. They may be saprophytes or parasites.
Viruses	A minute parasitic micro-organism much smaller than a bacterium that, having no independent metabolic activity, may replicate only within a cell of a living plant or animal host.
Pathogens	Any micro-organism capable of producing disease.
Harmless micro-organism	Any micro-organism that does not produce disease
Infection	The invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body.
Disease	An illness that affects a person, animal, or plant: a condition that prevents the body or mind from working normally
Colonisation	Colonisation describes when bacteria grow on body sites exposed to the environment, without causing infection.



## Chain of Infection



Certain conditions must be met in order for a microbe or infectious disease to be spread from person to person. This process, called the **chain of infection**, can only occur when all six links in the chain are intact.

All members, patients and bystanders are potential sources of infection and hosts of infective organisms. Other sources of infection are those normally found in and around the human body and environmental sources including water, food, equipment and air that may have become contaminated.

Infection Control principles are aimed at breaking one or more links in this chain.

1. **Caustive Agent** - the microorganism (for example bacteria, virus or fungi).
2. **Reservoir** (source) - a host which allows the microorganism to live, and possibly grow, and multiply. Humans, animals and the environment can all be reservoirs for microorganisms.
3. **Portal of Exit** - a path for the microorganism to escape from the host. The blood, respiratory tract, skin and mucous membranes, genitourinary tract, gastrointestinal tract, and transplacental route from mother to her unborn infant are some examples.

4. **Mode of Transmission** - since microorganisms cannot travel on their own; they require a vehicle to carry them to other people and places.

Modes of transmission include:

- Contact – e.g. when infection patients have contact with other patients or contaminated surfaces are not decontaminated
- Droplet – e.g. when hands become contaminated and transferred to eyes
- Airborne – e.g. inhaling small particles that contact infections agents.

5. **Portal of Entry** - a path for the microorganism to get into a new host, similar to the portal of exit.

6. **Susceptible Host** - a person susceptible to the microorganism. Factors that affect a person's susceptibility include:

- Immune status
- Chronic disease
- Shock
- Trauma
- Coma
- Age
- Invasive procedure

#### Breaking the chain

The way to stop germs from spreading is by interrupting or breaking the chain of infection. You can break the chain at any link. Below are some of the things you can do to break the chain of infection.

- Clean your hands frequently
- Stay up to date on your vaccines (including the flu shot)
- Cover coughs and sneezes
- Stay at home when unwell
- Follow the rules given by national and state and territory health departments
- Use personal protective equipment in the appropriate way
- Clean and disinfect the environment
- Sterilise all instruments and equipment, especially those that are shared

## Personal protective equipment (PPE)

The following PPE equipment are most useful in breaking the chain of infection via the three modes of transmission:

<b>PPE</b>	<b>Contact</b>	<b>Droplet</b>	<b>Airborne</b>
Gloves	Essential	As required	As required
Gown	Essential	As required	As required
Mask	Vomit	Surgical mask	P2 mask
Eye wear	As required	As required	As required

If you are required to full gown up due to an outbreak of an infectious disease or the nature of the injury you are treating, you will need to know the correct order for putting on and taking of your PPE. In order for your PPE to be effective, you must follow the correct order.

Below is a table listing the order to put on and take of you PPE

<b>Putting PPE on:</b>	<b>Removing PPE:</b>
Hand hygiene	Gloves
Gown/Apron	Hand hygiene
P2 mask	Eye wear
Fit check	Gown/apron
Eye wear	Hand hygiene
Refit check	Mask
Gloves	Hand hygiene
Stop check	

### For further information:

Read the *Australian Guidelines for the Prevention and Control of Infection in Health Care*, available from the NHMRC website:

<https://www.nhmrc.gov.au/about-us/publications/australian-guidelines-prevention-and-control-infection-healthcare-2019>

In order to complete the workbook, you will need to download these guidelines. You do not need to read the complete document. Use search to find sections that can help you answer the questions in the workbook.