Learning Guide

Infection prevention and control in dentistry

Name:

Workplace:

29395 Apply infection prevention and control in dentistry  Level 3  10 credits

Issue 1.0
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Introduction

Preventing and controlling infection is essential in all health care, and the same is true for oral health care services. All members of the oral health care team have responsibilities in controlling infection. In your role you have to carry out a wide range of tasks, many of which are essential activities for preventing and controlling infection. These tasks protect the patients, your team members and yourself. This learning guide gives you information about what those tasks are and why they are important. This will help make sure you, your workmates and the people you support get the very best from you!

How to use your learning guide

This learning guide supports your learning and prepares you for the unit standard assessment. There are activities to do to guide your learning.

This guide relates to the following unit standard:

- 29395 Apply infection prevention and control in dentistry (level 3, 10 credits).

This learning guide is yours to keep. Make it your own by writing notes that help you remember things, or where you need to find more information.

Follow the tips in the notes column.

You may use highlighter pens to show important information and ideas, and think about how this information applies to your work.

You might find it helpful to talk to your workmates or supervisor.

Complete this learning guide before you start the assessment.

What you will learn

This topic will help you to:

- follow infection control procedures.
- reduce the risk of infection for patients, staff and yourself.
- sterilise instruments and equipment.
- decontaminate instruments, equipment and clinical surfaces.
- dispose of different types of waste safely.
Infection control

Infection control is a very important part of working in dental care. It is the responsibility of everyone in the workplace and focuses on the practices that dental professionals follow to minimise the risk and spread of infection, both for dental staff and patients.

There are legal and best practice requirements that identify and outline how infection prevention and control should occur. All oral health care workers are responsible for being fully informed over the contents of, and implementing the various requirements.

The policies and procedures of your workplace have been developed to meet these requirements. By understanding and following all your workplace policies and procedures correctly you will help to ensure that the risk of infection in your workplace is minimised.

The NZ Standard for infection control

The New Zealand Dental Association and the Dental Council of New Zealand have produced the *Infection Prevention and Control Practice Standard*. The Standard is an important tool for assuring the public that professional standards are held and maintained by people working in the dental profession.

The purpose of the Standard is to protect dental health care workers and patients from cross infection in a dental surgery environment through the use of universal precautions and procedures. Having and following these precautions and procedures is the most effective way to reduce the risk of cross infection from blood, saliva and other body substances which must be regarded as potential sources of infection.

These precautions and procedures are particularly important as patients carrying blood and/or saliva borne disease may not have any symptoms or be aware of their infection or carrier status. Their medical histories may not always identify them as a carrier of a transmissible disease.

A copy of the Standard must always be available at the dental surgery. It covers responsibilities, work methods, instrument re-processing procedures, sterilisation of instruments, instrument pre-packaging, sterilisation and disinfection of surfaces, validation of sterilisation procedures, and waste disposal.

New Zealand legislation

There are several pieces of legislation particularly relevant to working in a dental surgery.
Health and Safety at Work Act 2015

The Health and Safety at Work Act exists to keep employees and other people safe while they are at work and are in places of work. It requires employers to have systems in place to identify actual and potential hazards and then take the appropriate action to eliminate or minimise the ability of that hazard to harm a person.

Health and Disability Commissioner Act

The Code of Health and Disability Services Consumers’ Rights, Regulations 1996 – commonly known as the Code of Rights – establishes the rights of consumers (patients), and the obligations and duties of providers to comply with the Code.

There are ten Rights identified in the Code. Right 4 is relevant to infection prevention and control because it states that patients have a right to a service delivered with an appropriate amount of skill and professional care. Inherent in professional skill and care is the prevention and control of infection.

Health Practitioners Competence Assurance Act 2003

This Act provides a framework for the regulation of health practitioners, such as dentists. The framework exists to protect the public and patients where there is a risk of harm from the practice of the profession, for example, if infection prevention and control procedures are not performed correctly and regularly. The Act provides for procedures to be consistent across the professions it regulates and has mechanisms that ensure practitioners are competent and fit to practise.

Health (Retention of Health Information) Regulations 1996

This legislation requires health care providers to keep for specific lengths of time, health information relating to their patients. This is important, particularly when a patient may have a known infection risk.

Privacy Act 1993

This Act gives oral health care workers the right to ask for medical information from a patient to assist in that patient’s care and treatment. It is the responsibility of all the staff in the dental surgery to protect the privacy of that information once the patient has disclosed it. This means you need to follow all your workplace’s policies and procedures about how you collect personal information and how you maintain the confidentiality of that information. For example, discuss a patient’s medical status in a private area and don’t leave patient records where others could see them.
Spread of infectious disease

Infections are caused by the invasion of pathogenic micro-organisms into the human body. Pathogens are very small organisms that cannot be seen by the naked eye. They are all around us and include bacteria and viruses which cause disease and infection.

<table>
<thead>
<tr>
<th>Key words</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>pathogenic</td>
<td>something that is able to cause disease</td>
</tr>
<tr>
<td>micro</td>
<td>something that is very small</td>
</tr>
<tr>
<td>organism</td>
<td>a living thing, such as a plant, animal or single celled life form, eg bacteria or fungal spore</td>
</tr>
</tbody>
</table>

It is important to understand how infections are transmitted (spread) so that controls can be put in place to stop or reduce the risk of this.

The three main ways that infections are transmitted are:

- contact transmission (direct and indirect contact).
- droplet transmission.
- airborne transmission.

**Contact transmission**

This is the most common way that infection is transmitted.

**Direct contact transmission**

This is when infection is physically transferred from one person to another by direct contact with blood, saliva and other body fluids. Infections that can be passed on like this include: HIV, tuberculosis, conjunctivitis, hepatitis, herpes and cold sores, influenza and colds, bacterial pneumonia, meningitis and skin infections like impetigo, scabies and ringworm.

Preventing the spread of this type of infection includes:

- washing hands thoroughly.
- wearing gloves.
- using a mask or face shield.
Indirect contact transmission

This is when a person comes into contact with contaminated objects such as instruments, equipment or surfaces. Infections that can be spread like this include: conjunctivitis, gastroenteritis (vomiting and diarrhoea), hepatitis and skin infections.

Preventing this spread involves safe work practices such as:

- washing your hands frequently, especially before touching your face, eyes, mouth, or nose with your hands.
- wearing gloves when handling things that may be infected.
- disinfecting and sterilising instruments and equipment.
- safe disposal of body excretions and soiled materials.

Droplet transmission

Small airborne droplets are formed when an infected person coughs or sneezes, or as the result of a procedure such as suctioning. These droplets travel through the air and can cause infection when they:

- travel directly from one person’s respiratory tract to another. The infection spreads when the droplets are inhaled or contact mucosal surfaces such as in the eyes, mouth or nose.
- come into contact with surfaces or objects and are then touched.

Some infections that can be passed on by droplet transmission include: measles, SARS, influenza and colds.

Preventing the spread of this type of infection includes:

- wearing protective masks, face shields and gloves.
- keeping surfaces clean and decontaminated.
- frequent hand-washing.

Key word

| Contaminated | An object or surface that has micro-organisms present that could transmit an infection. |

Mucus is the substance secreted by mucous membranes.
Airborne transmission

In airborne transmission, micro-organisms such as bacteria or viruses travel in droplets or on dust particles. These organisms or particles are widely dispersed (scattered) by air currents, then can be inhaled or settle on surfaces.

Infections spreading like this include influenza, measles, meningitis, whooping cough, pneumonia, polio, tuberculosis and chicken pox. Airborne transmitted infection can survive quite a long time outside the body, especially when protected by mucus.

Preventing the spread of this type of infection includes:

- avoiding close contact with the infected person.
- wearing a mask or face shield.
- wearing glasses or goggles.
Infection prevention and control procedures

Infection prevention and control procedures in a dental surgery include immunisation, patient screening, frequent washing of your hands, the wearing of personal protective equipment (PPE), safe disposal of all waste, keeping all surfaces and equipment clean and decontaminated, sterilisation of all instruments and taking appropriate measures when exposed to an infected person.

Immunisation

Immunisation with the right vaccines reduces the risk of contracting an infectious disease, particularly from blood or blood-contaminated substances. It is important for you to have regular immunisations, and to have up-to-date immunisation records for all dental health care staff at your workplace. Relevant vaccinations include: hepatitis B, influenza, measles, mumps, rubella, tetanus and diphtheria.

Patient screening

Patient screening allows you to identify any medical conditions or diseases that may pose an infection risk to staff. It also enables oral health care workers to identify patients who may have an increased risk of contracting an infectious disease.

Patient screening involves acquiring medical information from each patient and noting this on their record. Each new patient should be asked about their medical history. Existing patients need to be asked if they have any of the following:

- a new medication or a change in dosage.
- a recent operation or illness.
- a newly diagnosed condition.
- ongoing or current treatment for a problem or condition.

Patient records should be updated at all visits.

Washing hands

As your hands are regularly exposed to and come into contact with a number of micro-organisms during the course of a day, hand-washing is one of the most important ways of reducing the spread of infection. Hand hygiene involves thoroughly cleaning your hands to remove any contamination and micro-organisms. Micro-organisms can be picked up from body fluids or objects in the workplace. They cling to the skin on your hands and can be passed on to other people.
How to wash your hands
There are eight steps for effective hand-washing.

1 Roll your sleeves up to your elbows.
Remove watches or jewellery, if possible. This will protect the jewellery from being damaged, it will help you keep your hands clean and it will protect the person you support from being hurt by any sharp edges or hard surfaces on the jewellery.

2 Wet your hands with warm water.

3 Place a small amount of liquid soap on your hands.

4 Rub your hands together to form a lather.
Make sure you clean under your fingernails, around and between your fingers, around your fingertips and thumbs and down the sides of your hands.
5 Rub your hands in this way to clean them for at least 10–15 seconds.

6 Rinse your hands well using plenty of warm running water.

7 If you can, use the towel to turn off the tap so you don’t contaminate your clean hands.

8 Dry your hands thoroughly. 
(Steps 7 and 8 can be done in either order.)

Practise washing your hands this way.
If you do not wash your hands correctly, you will miss certain areas and risk spreading infection to the patient. There are certain areas on your hands often missed during hand-washing.

Where surgical procedures are to be carried out it is better to use special antiseptic soap and/or alcohol-based hand rubs (such as Purell or Dettol) as they remove micro-organisms that normal hand-washing does not.

**More info**

You need to wash your hands with soap and water when you feel a sticky build-up on your hands. Alcohol-based hand rubs will not help with sticky build-ups.
As part of a routine, you should wash your hands straight away:

- on arrival at the dental surgery, and as you finish work.
- before and after direct contact with a patient and between patients.
- before you put on gloves and after you take gloves off.
- before a procedure and after a procedure.
- after contact with any body fluids such as blood or saliva.
- after contact with mucous membranes, broken skin, wound dressings, skin rashes or infections.
- after touching objects likely to be contaminated by blood, saliva, mucus (as from a person sneezing or coughing).
- after contact with contaminated surfaces, equipment or used instruments.
- when moving from a contaminated body site to a non-contaminated site during care.
- after using the toilet.
- after handling chemicals.

As well as routine hand-washing, you should always:

- cover any cuts or open skin wounds with a waterproof dressing.
- cover bandages and sticking plasters with a plastic or latex glove to prevent the wound from becoming infected or contaminated.
- cover your nose and mouth if you cough and sneeze.
- keep your fingernails short and clean (don’t wear artificial nails).
- remove finger rings, watches and wrist jewellery such as bracelets.
Personal protective equipment (PPE)

Infection is also reduced by wearing appropriate personal protective equipment (PPE). Some dental equipment such as rotary drills and cleaning brushes, and air/water syringes create a spray that can contain large droplets of water, saliva, blood and micro-organisms. This can be inhaled through the nose or mouth, or land on nearby surfaces, the patient or yourself. Wearing correct PPE helps to protect your hands and the membranes of your eyes, nose and mouth from infection.

Combining PPE with other precautions is recommended, for example, using both an alcohol-based hand wash and gloves to prevent cross-contamination. The alcohol-based hand wash cleans your hands of any pathogenic micro-organisms that you may be carrying while the gloves act as a barrier to stop any remaining organisms being transferred to the patient from your hands. The gloves may also act as a barrier and reduce the risk of you picking up any pathogens from the patient with an infection.

Key word

| cross-contamination | the spreading of germs or infection from one person to another, one thing to another, or from one area to another area |

Protective clothing

Protective clothing should be worn when undertaking dental procedures. The clothing, such as surgery gowns, should prevent body fluids such as blood passing through and coming into contact with the clothes and/or skin of the dental health care worker.

Procedures for using protective clothing include:

- change protective garments daily, and where necessary, between patients.
- replace protective clothing when it is visibly soiled.
- do not wear protective clothing outside the clinical area.

Protective eye wear (glasses)

Protective glasses are used by both the dental team and the patient to help stop pathogenic micro-organisms being transmitted via the eyes, or mucous membranes of the nose or mouth. Glasses should be resistant to impact and have solid side shields.

Non disposable protective eyewear should be thoroughly washed with detergent and water after each use.
Mask or face shield

Masks or face shields are worn during dental procedures that may create spray droplets containing saliva or blood such as:

- surgical procedures that use high-speed and low-speed drill hand pieces or ultrasonic scalers.
- manipulation with sharp cutting instruments.
- spraying air and water into the patient’s mouth.

The mask is worn to prevent spray droplets from entering your mouth or nose, and the face shield prevents any micro-organisms from coming into contact with your eyes, nose or mouth.

Procedures for using masks/face shields include:

- change the mask/face shield when it becomes wet.
- change it when it becomes visibly contaminated with blood, saliva or spray droplets.
- change the mask/face shield between patients to prevent a potential for cross-infection.
- remove the mask by pulling or untying the strap/ties at the back. Don’t touch the front of the mask.
- put it straight into the designated waste containers after use.
- don’t leave a mask hanging around your neck.

Surgical gloves

Gloves act as a barrier, preventing pathogenic micro-organisms from being transmitted to the hands. Procedures for using gloves include:

- wear disposable gloves during all patient examinations and procedures.
- change gloves before treating another patient and dispose of the gloves appropriately.
- replace gloves as soon as possible if they become damaged by being torn or punctured.
Over gloves

Over gloves are made from clear plastic and are placed over surgery gloves for temporary use, such as getting or returning supplies/equipment from or to the storage area and/or surgery. They must be removed once you are involved in a dental procedure. Over gloves should never make contact with the mouth of the patient.

How to take off your PPE

Follow this procedure when removing personal protective equipment:

- gloves off first, using the method below.
- masks should be removed by pulling or untying the strap or ties. Don’t touch the front of the mask.
- eye protection glasses should be removed by their arms. Don’t touch the outer surfaces.
- remove the surgical gown and fold it in on itself.

Dispose of the used PPE in the appropriate way. This will be outlined in your workplace’s policy and procedures with some being disposed of, while other items may need to be washed.

How to remove gloves safely

1. Turn the first glove inside out as you take it off and crumple it into the other gloved hand.

2. Slide your fingers inside the remaining glove and peel the second glove off over the first one, which bundles them together.

3. All the contaminated surfaces of the gloves are now safe from being touched. Dispose of the gloves into a waste bag.
Disposing of waste materials

Waste refers to any discarded or unneeded agents, products, materials or substances that are generated by or from oral health care procedures.

Waste materials must be separated sensibly according to what type of waste it is, and then disposed of correctly, for the health and safety of patients, staff and the general public. Waste that is incorrectly disposed of could harm others, allow the spread of infection and also damage the natural environment.

As a dental health care worker, you will be responsible for taking actions to ensure waste is dealt with appropriately from the moment it is created through to its final disposal. Each type of waste material will have its own correct procedures for disposal. These procedures will be based on:

- New Zealand standards.
- government legislation.
- local authority regulations (city and regional councils).
- guidelines from professional organisations such as the New Zealand Dental Association and the New Zealand Dental Council.

It’s always important to remember to use the correct PPE when handling or disposing of waste, and to handle waste carefully and as little as possible.

Handle waste in a way that:

- prevents exposure to body fluids.
- prevents contamination of clothing.
- avoids transfer of organisms to other patients and the environment.

A waste disposal method within the workplace
Types of waste

Here are some examples of different types of waste.

Hazardous waste

Hazardous waste is very harmful in some way, and poses a threat or risk to public health, safety or the environment. It might be toxic, carcinogenic, corrosive or infectious.

Examples include mercury in dental amalgam, extracted teeth containing amalgam, cytotoxic medicaments, and fixer and developer solutions.

Hazardous waste must be placed in the correct container that is strong, secure and correctly labelled.

Hazardous liquid waste is also very harmful, and is in liquid form. It cannot be placed in the general rubbish, washed down the drain or disposed of in the sharps container because it can contaminate the ground and water supplies and pose a long term health problem for birds, fish, animals and humans.

Examples include liquid mercury, amalgam and silver. Silver amalgam, for example, must also be filtered through a gravity-fed sedimentation suction system, stored under water in a screw capped container.

The container will then be collected for disposal by a certified waste contractor who can recover the silver.

Controlled waste

Controlled waste can also be called clinical waste. It is waste produced by procedures and treatments at the clinic that cannot be disposed of in the general refuse services provided by the local authority. This is because it might be contaminated or soiled with infectious or potentially infectious human or animal body tissues, fluids, or solids. It might also be considered culturally or aesthetically inappropriate to dispose of this waste by normal methods.

Examples include extracted teeth, bodily fluids such as blood and saliva, used PPE such as gloves, and disposable items such as needles, sharps and burs contaminated with bodily fluids.

Controlled waste must be placed in a special secure container to be collected and disposed of by appointed commercial waste management companies with expertise in handling this type of waste.

More info

Body substances and parts – eg blood and extracted teeth – can be of personal and/or cultural importance to some patients, including Māori patients.

These items may be returned to the patient if requested. Your workplace will have specific hygiene policies and procedures you will need to follow in this case.
General waste

General waste refers to any waste that can be disposed of without controls, either at a landfill, recycling plant or into a sewer. It is not dangerous in any way, and is not classified within either of the categories of hazardous waste or controlled waste.

Examples include paper, cardboard and plastics that can be recycled in the standard service from the local authority. It can also include items that can go in the standard rubbish, including cotton wool rolls, tissues, paper towels, gloves, GIC/amalgam capsules, suction tips, plastic barriers, micro-brushes, PPE and prophylactic cups.

A black plastic bag is often used by surgeries to collect and contain general rubbish like this.

**General liquid waste** can be disposed of by carefully pouring it into the sewerage drainage system via a sluice or toilet and flushing it with free flowing water.

Examples include suctioned fluids and can also include blood, unless the patient wants their blood returned for cultural or personal reasons.

Disposal containers

Waste containers are often colour-coded to indicate the type of waste category they are appropriate for, for example black plastic bags are often used for general waste and yellow bags or containers for controlled waste. These containers will vary from area to area depending on disposal contracts, local authority regulations and local practices.

Waste disposal bags/containers should not be filled to more than two thirds of their capacity, and may have to be tied with a high tensile ratchet tie to prevent spillage or leaking. Bags of general waste should be removed from the dental surgery at the end of each day.
Disposing of needles

Safely disposing of used needles after each procedure minimises the danger of injury from needles and also reduces the risk of infection. This is particularly relevant in procedures that involve local anaesthetics.

Immediately after use, sharps such as needles, scalpels, used steel burs, local anaesthetic cartridges, matrix bands and other sharp instruments, should be disposed of and placed into an approved biohazard container that can be sealed before disposal by the appointed disposal company.

Your workplace procedures on disposal guidelines will probably include instructions like these:

- dispose of sharps immediately after use.
- never fill the bin above the marked full line.
- lock the bin when it is ready for disposal collection.
- fill out the container label before it is collected.
- sign out the container when it is collected by the disposal collector.
Recapping needles

Recapping needles should be avoided where possible, by putting a needle directly into a sharps disposal container after use. Recapping increases the risk of a needle-stick injury and cross infection.

However, if recapping is required during a procedure, the NZ Dental Association advises that a one-handed technique must be used, either a scoop method or by using a recapping device.

Needle recapping must never involve two hands because of the potential for injury.

Write

How are sharps disposed of in your workplace?

How is hazardous waste disposed of in your workplace?

How are extracted teeth disposed of in your workplace?
Responding to exposure to a possible infection

Your workplace will have policies and procedures to guide your response to exposure to a possible infection and you should familiarise yourself with what you should report and the procedure you need to take to minimise the risk of infection in case of:

- direct contact with, or injuries caused by, any contaminated instrument, equipment or material, for example, used needles and other sharp objects.
- ingestion of, or mucous membrane contact with body fluids of a patient, for example, blood splashed in the eyes or nose.
- the skin is penetrated or scratched and comes into contact with blood, serum or other body fluid.

The procedures will describe:

- what to do if you come into contact with body fluids.
- what to do if you have a needle-stick injury.
- what medical advice to seek.
- how to report the incident to the appropriate person.
- how to record the incident on the appropriate forms.
- what short and long term follow up may be needed, for example testing or counselling.

These policies and procedures will also provide information on how patients who may have been exposed to infectious material should be informed and managed.

If you have been exposed, or think you have been exposed to body fluids, follow the policies and procedures of your workplace.

Your workplace may also want to investigate all incidents involving contact with blood or body fluids or other sources of infection and take action to prevent a similar incident from happening again.
What to do if you or one of the staff might have been exposed to body fluids

<table>
<thead>
<tr>
<th>When</th>
<th>What</th>
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</thead>
<tbody>
<tr>
<td>Immediately after exposure</td>
<td>• Administer first aid according to your workplace’s policies and procedures.</td>
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<tr>
<td></td>
<td>• Remove any contaminated clothing or PPE.</td>
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<tr>
<td></td>
<td>• Wash the affected area thoroughly with soap and water and where appropriate flush eyes or other affected mucous membranes with large amounts of water or normal saline.</td>
</tr>
<tr>
<td>As soon as possible after exposure</td>
<td>• Seek medical advice or treatment.</td>
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<tr>
<td></td>
<td>• Complete the correct form, for example, an accident/incident report.</td>
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<tr>
<td></td>
<td>• Check the details of the medical history of the source (usually a patient) in the clinical file. Record if the source is unknown.</td>
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<tr>
<td></td>
<td>• Making sure all details are recorded and reported, including the:</td>
</tr>
<tr>
<td></td>
<td>- date and time of the incident.</td>
</tr>
<tr>
<td></td>
<td>- type of exposure.</td>
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<td></td>
<td>- how the incident occurred.</td>
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<td></td>
<td>- name of the individual (if appropriate).</td>
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<tr>
<td></td>
<td>• Receive support, such as counselling.</td>
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<td></td>
<td>• Have appropriate tests such as blood tests or other medical treatment.</td>
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<tr>
<td></td>
<td>• You may also need to fill out extra forms as required by your workplace or District Health Board.</td>
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</tbody>
</table>
Minimising contamination

Contamination is where an object or surface has micro-organisms present that could transmit an infection. Instruments, equipment, surfaces, materials and medicaments can all become contaminated from micro-organisms present in:

- blood and/or serum (the liquid that can separate from clotted blood).
- other body fluids such as saliva.
- the mucus expelled by coughing and/or sneezing.

Professional best practice

Minimising contamination comes from following professional best practice.

Using PPE correctly

Wearing gloves, masks, glasses and gowns will only reduce the risk of infection if used correctly, for example by:

- not touching surfaces, instruments or materials with contaminated gloved hands.
- not wearing protective gowns outside of the primary surgery area.
- ensuring that the PPE is clean, in good condition and fit-for-purpose.

Following basics of personal hygiene

- Cover the mouth and/or nose to help prevent micro-organisms from being inhaled or exhaled, especially when coughing or sneezing.
- Wash your hands frequently and effectively with soap and water or use alcohol-based hand rubs.

Using contamination zones

Using a zoning technique ensures that contaminated areas and instruments never come into contact with sterilised items. There will be specific areas in the surgery for placing different items. For example, items used during a procedure will then go in an area designated for dirty items after use.

Following manufacturer’s instructions

Always follow manufacturer’s instructions for all instruments, equipment, surfaces, materials, medicaments and cleaning products.
Using single-use disposable items

Single-use disposable items are used on one patient for one time and then disposed of. Single-use devices are usually not heat tolerant, so cannot be sterilised or reliably washed and cleaned. Examples of single-use disposable items are:

- cotton wool rolls.
- matrix bands.
- anaesthetic cartridges.
- steel burs.
- glass ionomer cement (GIC) capsules.
- needles.
- plastic suction tips.
- amalgam capsules.
- rubber cups.

Matrix band

This is an example of an item that should be used once, then disposed of as controlled waste. The matrix band is a thin strip of plastic placed between the teeth to keep any filling material used on a cavity from bonding with another adjacent tooth.

More info

There is more information on many of these single-use items, along with how to handle and look after them, in the learning guide for 29454, Oral health care procedures.
Decontamination

Decontaminating is a two-step process:

1. **Cleaning** washes any visible biological matter that is left on the instruments or equipment. Cleaning can be done manually (by a person) or mechanically (by machines such as an ultrasonic cleaner).

2. **Sterilising** kills all micro-organisms on instruments or other objects using a special high temperature steam autoclave.

All instruments should be cleaned then sterilised. If an instrument has not been thoroughly cleaned and is then sterilised, that can ‘bake’ the blood and mucus onto it, with bacteria remaining underneath.

Sterilised instruments should always be readied and organised in one designated clean zone, well away from the contaminated instruments.

It is good practice to ensure that when working with instruments, you move from dirty ones to clean ones to sterile ones.

Some equipment cannot be sterilised, often because of its size, so it must be disinfected after being washed.

<table>
<thead>
<tr>
<th>Key words</th>
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</tr>
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<tbody>
<tr>
<td>cleaning</td>
<td>washing (manually or mechanically) biological matter from instruments or equipment</td>
</tr>
<tr>
<td>sterilising</td>
<td>a steam process killing all living micro-organisms</td>
</tr>
<tr>
<td>decontaminating</td>
<td>the two-step process of cleaning then sterilising</td>
</tr>
<tr>
<td>disinfecting</td>
<td>reduces the number of living micro-organisms but does not kill all bacteria and spores</td>
</tr>
</tbody>
</table>

More info

There is more information on when disinfecting is the right process to choose, and how to do it, later in this learning guide.
Decontaminating instruments

Dental instruments are classified into three categories depending on their risk of transmitting infection. The categories are:

- **Critical**: instruments that enter or are capable of entering the vascular system or tissue that would be sterile under normal circumstances.

- **Semi-critical**: instruments that come into contact with mucous membranes and do not normally enter sterile areas of the body.

- **Non-critical**: instruments that only come into contact with intact skin.

This table shows the different categories for different instruments.

<table>
<thead>
<tr>
<th>Description</th>
<th>Examples of instruments</th>
<th>Need for decontamination or sterilisation</th>
</tr>
</thead>
</table>
| Critical instruments | • Forceps  
• Scalpels  
• Bone chisels  
• Scalers  
• Surgical burs | They **must** be sterilised after each use.                   |
| Semi-critical instruments | • Mirrors  
• Reusable impression trays  
• Amalgam condensers | These **should** be sterilised after each use, however if sterilisation is not possible because the instrument will be damaged by heat, the instrument should receive high-level disinfection treatment. |
| Non-critical instruments | • External components of x-ray heads  
• Blood pressure cuffs  
• Pulse meters | Because these non-critical surfaces have a relatively low risk of transmitting infection, they may be reprocessed between patients with intermediate-level or low-level disinfection or detergent and water washing. |
Decontaminating dental instruments

1. Wear the correct PPE:
   - wear heavy-duty gloves over clinical gloves to reduce the risk of injuries by sharps.
   - use protective glasses, mask and/or a gown if the cleaning will involve splashing or spraying.

2. Place the instruments in a leak proof container and take them to the instrument processing area in the workplace for cleaning.

3. Place the instruments into a sink of warm water which has disinfectant/detergent added. If the instruments cannot be cleaned straight away, leave them in the leak-proof container and add water and disinfectant/detergent.

4. Carefully wash and remove all visible blood and other biological matter:
   - scrub the instruments with a nylon brush under the surface of the water.
   - rinse the instruments in a separate clean water sink.
   - check the instruments are completely clean.
   - dry the instruments with a disposable cloth.

5. If using an auto washer/disinfector to remove any non-visible biological material:
   - place the instruments into the washing cassettes.
   - position the cassettes carefully on the rack of the washer/disinfector.
   - place individual instruments upright in the basket provided in the machine.
   - make sure nothing is obstructing the washing arms and that they can turn freely.
   - insert an indicator in each load and turn on the machine.
   - complete washer/disinfector records to ensure the cycle parameters are met.
   - check and document detergent and rinse additive residue daily.

6. If using an ultrasonic cleaner:
   - place the instruments in the basket.
   - turn the ultrasonic cleaner on for 5 to 15 minutes until the instruments are visibly clean.
   - place heavy items such as extraction forceps into the ultrasonic cleaner separately.
7 Check the instruments to ensure they are completely clean.

8 Package the instruments individually into medical grade sterilisation wraps or cassettes in preparation for sterilisation. It is important to ensure they are packaged correctly to protect them from further contamination.

9 Move the instruments to the appropriate area for sterilisation.

**Decontaminating hand pieces and scalers**

1 Run the drill hand piece for 30 seconds before disconnecting it from the surgery cart, taking care to minimise spray dispersion while doing this.

2 Remove any burs.

3 Place in auto washer/disinfector.

4 Remove from the washer/disinfector.

5 Connect to the appropriate adaptor.

6 Start the process.

7 Remove and place in an instrument cassette.

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**Hand piece storage**
Decontaminating clinical surfaces

Clinical surfaces are surfaces that can be directly contaminated by instruments, equipment, or touching during an oral health care procedure. They must be cleaned and disinfected between patients. Clinical surfaces include:

- drawer and door handles.
- overhead light handle.
- x-ray head.
- bracket top.
- bench top.
- patient’s chair.
- dentist’s tray.
- spittoon.

All clinical surfaces should be cleaned immediately after a procedure with neutral detergent disposable wipes or with disinfectant (sodium hypochlorite 5% Chlorwhite) at 10,000 ppm (20 capfuls per one litre of water).

All surfaces should be easy to clean. All joins should be sealed so that there are no areas where cleaning may be difficult. The primary surgery area should not have carpet.

Surfaces that may become contaminated with body fluids or infected particles during a procedure can be covered with disposable covers or contact wrap. This cover will have to be changed between patients.

Through the use of the zoning principle, the likely areas that will become contaminated during a procedure are defined and generally only these areas will need to be cleaned and disinfected between procedures. Patient records should be written somewhere outside the clean zone.
To decontaminate and disinfect clinical surfaces:

1. Wear the correct PPE such as gloves and face mask.

2. Clean away any biological material such as body fluids or mucous splatter with paper towels. Dispose of these in the correct waste container.

3. Spray the disinfectant onto the surface or apply the disinfectant to a clean damp disposable cloth and then wipe or rub over the surface. Don’t use excess amounts of cleaner/disinfectant as the excess can seep into joints or cracks and make drying more difficult or could damage equipment.

4. Allow surfaces to air dry.

5. Disposable cleaning cloths should be lint free and discarded in the correct container. Use a cloth that is damp but not dripping to prevent over-dilution of the solution.

If a clinical surface cannot be adequately cleaned and/or disinfected, it should be covered with a disposable plastic barrier (bag). Surfaces that can be protected with barriers include:

- triple syringe.
- intra air motor.
- x-ray unit heads.
- x-ray unit control.
- operating light handles.
- curing lights.
- computer equipment.

Plastic barriers should be removed and disposed of while you are still wearing gloves. After removing your gloves, perform hand hygiene and place the next clean barrier on the equipment.
Sterilising instruments and equipment

Following decontamination by washing, all instruments and equipment must be sterilised. Sterilisation is a compulsory process for all reusable instruments and equipment that can withstand the process.

Sterilisation involves the following steps:
1. preparing the instruments and equipment.
2. packing instruments and equipment for sterilisation.
3. sterilising instruments and equipment.
4. releasing instruments and equipment.

Preparing instruments for sterilisation

After cassettes of instruments have been washed and decontaminated, they will need to be wrapped in blue ‘Kimgard’ wrap ready for sterilisation. This wrapping keeps them clean and free from re-contamination.

There is a specific way that the cassettes should be wrapped. All wrapped instruments need to have a label that identifies the cassette and the date. A Class V indicator should also be included, one per load.
Packing instruments for sterilisation

Instruments and equipment can be sterilised using an autoclave machine. Items in the autoclave are subjected to pressurised steam for a set length of time to kill any fungi, bacteria or viruses. Steam sterilisation is a proven, efficient and dependable method.

Autoclaves come with manufacturer’s guidelines, so it is important that you understand and follow those guidelines correctly. Wrapped instruments or cassettes need to be packed into the autoclave in a particular way for the sterilising to work. If the packing is not done correctly, or if the chamber is overloaded, cool air pockets may occur which could affect the sterilising process.

Correct packing of the steriliser involves:

- having only a single layer of cassettes/trays on each rack.
- tilting hollow ware items on their edge in a drainage position.
- arranging the items so the steam can freely circulate around them.
- not overfilling the autoclave.
- following the manufacturer’s instructions for loading the chamber.

Packing single instruments for sterilisation

Single instruments, for example, extraction forceps, are placed in self-sealing pouches. You will need to:

1. insert an indicator into the pouch.
2. make sure that the instruments are placed in the pouch in the correct way, for example, forceps are placed beak end first.
3. fold along the dotted line to ensure a complete seal.
4. identify and date packages of instruments.
Using the autoclave steriliser

Once the items are in the autoclave steriliser, close the door, ensure it is set on the correct setting (temperature, pressure and time) and has enough water, and then turn it on.

When the steriliser has finished its cycle, turn it off. Don’t touch the instrument packs and equipment until they are dry and cool, because hot packs can absorb moisture and bacteria from your hands.

Chemical indicators are designed to monitor whether there has been an equipment malfunction or any other failure in the sterilisation process. A chemical test is required for each sterilisation cycle. Class V indicators are used, one per load.

An indicator that shows ‘reject’ indicates that the sterilisation process has failed. If this occurs, reprocess the contents of the autoclave. If a further failure occurs, advise an appropriate person in your workplace for the steriliser to be repaired. The autoclave should not be used until it has been repaired and is operating correctly.

A package will be considered as non-sterile and not suitable to use if the package is:

- incorrectly wrapped.
- damaged or opened.
- still has any wetness on it.
- placed or dropped on a wet or dirty surface, such as a floor or sink area that has not been decontaminated/sterilised.

Steriliser maintenance

At the beginning of the working day it is recommended that you:

- clean the rubber door seal with a clean, lint free cloth.
- check the chamber and shelves for cleanliness and any debris.
- remove any debris and thoroughly wash the chamber.
- fill the reservoir with fresh distilled water.
**Post-sterilisation guidelines**

Sterilised cassettes and instruments should be stored in a clean, dry, covered or closed area to minimise contamination.

Storage areas for sterilised cassettes and instruments should be kept clean to prevent contamination and should be used to store sterilised cassettes and instruments only.

The cassettes and instruments should be used in date order with the oldest dated items used first.

A steriliser log should also be kept. For each batch of sterilised items, record the following information:

- serial number of the autoclave.
- load number.
- date of sterilisation.
- the batch number.
- the identification (signature) of the person who managed the sterilisation process and storage, and released them for use in the surgery.

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**Steriliser log**
Disinfection

Some equipment cannot be sterilised (especially larger equipment), so it must be disinfected after being washed, following your workplace’s procedures. To make sure that the disinfection is effective, follow all the manufacturer’s guidelines. Safety data sheets give information on the safe use of cleaners and disinfectants. Different factors can affect how effective disinfectants can be.

<table>
<thead>
<tr>
<th>Factors affecting disinfectant</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfactory contact</td>
<td>The disinfectant must be in direct and complete contact with the surface for the right length of time.</td>
</tr>
<tr>
<td>Avoiding neutralisation</td>
<td>Hard water, plastic, rubber, biological material and many detergents can reduce the effectiveness of disinfectants.</td>
</tr>
<tr>
<td>Concentration</td>
<td>A solution that is not at the correct strength will not be fully effective. Higher concentrations may not work any more effectively and just waste the product.</td>
</tr>
<tr>
<td>Stability</td>
<td>Age can affect the effectiveness of the disinfectant. Always check the expiry date.</td>
</tr>
<tr>
<td>Speed of action</td>
<td>Some disinfectants destroy micro-organisms more quickly than others.</td>
</tr>
<tr>
<td>Range of action</td>
<td>Not all disinfectants destroy the same range of micro-organisms.</td>
</tr>
</tbody>
</table>

When decontaminating equipment, use:

- the correct PPE.
- the correct cleaning and disinfection products. Manufacturer’s safety data sheets give information on the safe use of cleaners and disinfectants.
- the correct technique. For example, make sure that dirty and clean cloths are used appropriately and that the disinfectant is left on the equipment for the right amount of time.
This table describes some disinfectants and the guidelines for their use. Add to this list two other disinfectants that you use and then complete the table.

<table>
<thead>
<tr>
<th>Type of disinfectant</th>
<th>Used for:</th>
<th>NOT recommended for:</th>
<th>Contact time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypochlorites such as:</td>
<td>• Surfaces such as floors and ceramic basins</td>
<td>• Upholstery (might bleach or fade it)</td>
<td>10 minutes</td>
</tr>
<tr>
<td></td>
<td>• Blood and body fluid contamination</td>
<td>• Bench tops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prisept</td>
<td>• Chrome and other metal surfaces</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Milton</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Domestos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Presept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol such as:</td>
<td>• Bench tops already clean</td>
<td>Delicate monitoring or electronic equipment</td>
<td>At least 2 minutes</td>
</tr>
<tr>
<td></td>
<td>• Chrome and stainless steel surfaces</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ceramic basins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenolic and quaternary ammonium compounds</td>
<td>• Floors</td>
<td>Do not use in hard water.</td>
<td>10 minutes</td>
</tr>
<tr>
<td></td>
<td>• Bench tops</td>
<td>Do not use in addition to soap (reduces effectiveness).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Furniture</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Summary table of infection control procedures

<table>
<thead>
<tr>
<th>What is the risk?</th>
<th>Control procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff are often in contact with blood and saliva from the patient’s mouth.</td>
<td>• Wear PPE such as gloves, mask, protective glasses and gown.</td>
</tr>
<tr>
<td></td>
<td>• Ensure single-use disposable items are only used once and then disposed of.</td>
</tr>
<tr>
<td></td>
<td>• Wipe away all blood, saliva and other body fluid spillages.</td>
</tr>
<tr>
<td>Used instruments and equipment could come into contact with sterilised items.</td>
<td>• Use a zoning technique. There will be specific areas in the surgery for placing different items, for example, items used during the procedure will be placed in a zone designated for dirty items.</td>
</tr>
<tr>
<td>There are many opportunities for cross-contamination and cross-infection.</td>
<td>• Dispose of all disposable items at the end of a procedure.</td>
</tr>
<tr>
<td></td>
<td>• Fully clean and sterilise non-disposable instruments.</td>
</tr>
<tr>
<td></td>
<td>• Clean and disinfect all work surfaces.</td>
</tr>
<tr>
<td></td>
<td>• Wear gloves and PPE for all procedures.</td>
</tr>
<tr>
<td></td>
<td>• Use gloves only once and then discard them.</td>
</tr>
<tr>
<td></td>
<td>• Dispose of all sharps in the correct way.</td>
</tr>
<tr>
<td></td>
<td>• Keep your personal immunisations current.</td>
</tr>
<tr>
<td></td>
<td>• Follow the infection control policies and procedures of your workplace.</td>
</tr>
<tr>
<td>Instruments and equipment are regularly contaminated by their use.</td>
<td>• Transfer dirty instruments to the designated reprocessing area.</td>
</tr>
<tr>
<td></td>
<td>• Clean and decontaminate the instruments and equipment.</td>
</tr>
<tr>
<td></td>
<td>• Sterilise and/or disinfect instruments and equipment.</td>
</tr>
<tr>
<td></td>
<td>• Prepare and package the sterilised instruments.</td>
</tr>
<tr>
<td></td>
<td>• Store the instruments and equipment.</td>
</tr>
</tbody>
</table>

---

**More info**

The zoning technique is explained in full detail in the learning guide for 29454, Oral health care procedures.
Write

In this table, tick the infection prevention procedures you use at work.

<table>
<thead>
<tr>
<th>Before the procedure</th>
<th>Tick ✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>I carry out the following personal hygiene procedures:</td>
<td></td>
</tr>
<tr>
<td>- clean my fingernails and remove rings and other hand/wrist jewellery.</td>
<td></td>
</tr>
<tr>
<td>- wash my hands correctly.</td>
<td></td>
</tr>
<tr>
<td>- use alcohol-based hand rub.</td>
<td></td>
</tr>
<tr>
<td>- cover any broken skin areas.</td>
<td></td>
</tr>
<tr>
<td>- tie long hair back.</td>
<td></td>
</tr>
<tr>
<td>I use suitable PPE such as:</td>
<td></td>
</tr>
<tr>
<td>- gloves.</td>
<td></td>
</tr>
<tr>
<td>- surgical mask.</td>
<td></td>
</tr>
<tr>
<td>- protective eyewear.</td>
<td></td>
</tr>
<tr>
<td>- protective gown.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>During the procedure I always:</th>
<th>Tick ✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>- change gloves if they are soiled.</td>
<td></td>
</tr>
<tr>
<td>- follow cough etiquette.</td>
<td></td>
</tr>
<tr>
<td>- dispose of any sharps in the appropriate container.</td>
<td></td>
</tr>
<tr>
<td>- follow specific procedures for patients with known infectious diseases such as HIV, Hepatitis B or C, or head lice.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After the procedure I always:</th>
<th>Tick ✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>- dispose of sharps in the appropriate manner.</td>
<td></td>
</tr>
<tr>
<td>- dispose of waste, such as materials soiled by blood, serum, saliva or other bodily fluids.</td>
<td></td>
</tr>
<tr>
<td>- clean and decontaminate instruments and equipment.</td>
<td></td>
</tr>
<tr>
<td>- sterilise the instruments.</td>
<td></td>
</tr>
<tr>
<td>- clean all clinical surfaces.</td>
<td></td>
</tr>
<tr>
<td>- remove personal protective equipment.</td>
<td></td>
</tr>
</tbody>
</table>
## Glossary

<table>
<thead>
<tr>
<th>Key words</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>cleaning</td>
<td>washing (manually or mechanically) biological matter from instruments or equipment</td>
</tr>
<tr>
<td>contaminated</td>
<td>an object or surface that has micro-organisms present that could transmit an infection</td>
</tr>
<tr>
<td>cross-contamination</td>
<td>the spreading of germs or infection from one person to another, one thing to another, or from one area to another area</td>
</tr>
<tr>
<td>decontaminating</td>
<td>the two-step process of cleaning then sterilising</td>
</tr>
<tr>
<td>disinfecting</td>
<td>reduces the number of living micro-organisms but does not kill all bacteria and spores</td>
</tr>
<tr>
<td>micro</td>
<td>something that is very small</td>
</tr>
<tr>
<td>organism</td>
<td>a living thing, such as a plant, animal or single celled life form, eg bacteria or fungal spore</td>
</tr>
<tr>
<td>pathogenic</td>
<td>something that is able to cause disease</td>
</tr>
<tr>
<td>sterilising</td>
<td>a steam process killing all living micro-organisms</td>
</tr>
</tbody>
</table>