

OUTCOME 1

Understand the Process of Infection Control

Questions

- 1** Hand hygiene is important in minimising the risk of cross infection in the dental workplace. Which one of the following levels of hand hygiene aims to physically remove routinely acquired microorganisms?
 - A** Clinical
 - B** Hygienic
 - C** Social
 - D** Surgical

- 2** Cross infection may occur in the dental workplace in a variety of ways. Which one of the following options describes the least likely method for a cross-infection incident to occur in a well-organised environment?
 - A** Aerosol spray
 - B** Direct contact
 - C** Inoculation injury
 - D** Particle spatter

- 3** What is the correct term used to describe a person who is infected with a pathogenic microorganism but who shows no outward signs of disease?
 - A** Carrier
 - B** Contaminated
 - C** High risk
 - D** Infectious

- 4 There are various levels of cleanliness referred to in the clinical setting. Which one of the following options is the term used when only bacteria and fungi have been destroyed by the cleaning method involved?
- A Aseptic
 - B Disinfected
 - C Socially clean
 - D Sterilised
- 5 Various methods are used in the dental workplace to prevent cross-infection incidents. Which one of the following options is the term used to describe the method of removing potential aerosol and droplet contamination between dental procedures?
- A Barrier method
 - B Surface cleaning
 - C Use of disposables
 - D Zoning
- 6 Which one of the following is an example of a potential indirect cross-infection incident?
- A Clean inoculation injury
 - B Use of disinfected extraction forceps
 - C Use of a disposable aspirator tip
 - D Use of a new endodontic hand file
- 7 There are various methods available to the dental team for preventing cross infection in the dental workplace. Which one of the following options is the most effective method of preventing cross infection between patients?
- A Use of autoclave
 - B Use of barrier methods
 - C Use of disposable items
 - D Use of washer–disinfector
- 8 While working in the dental workplace, the dental team will always try to avoid the transfer of microorganism contamination from one person to another. Which one of the following methods prevents cross infection from staff to patients?
- A Disinfection
 - B Handwashing
 - C Sterilisation
 - D Zoning

- 9** Various methods are used in the dental workplace to prevent cross-infection incidents. Which one of the following options is the term used to describe the method of preventing contamination of equipment items that cannot be sterilised in the usual way?
- A** Barrier method
 - B** Surface cleaning
 - C** Use of disposables
 - D** Zoning
- 10** The basic principle of the system of 'standard (universal) precautions' used in all health-care work environments is to assume which one of the following?
- A** All dental personnel will be free from disease
 - B** All patients will have received a full range of childhood vaccinations
 - C** Any patient may be infected with a pathogen at any time
 - D** Any patient may have a natural immunity to some diseases
- 11** Which one of the following options is the term used when items have undergone a process to remove physical contamination so that they can be rendered safe for reuse?
- A** Cleaned
 - B** Decontaminated
 - C** Disinfected
 - D** Sterilised
- 12** Which one of the following items of personal protective equipment is most important in preventing cross infection by aerosol spray?
- A** Mask
 - B** Plastic apron
 - C** Safety glasses
 - D** Visor
- 13** There are various routes of transmission of microorganisms that may result in a cross-infection incident. Which one of the following options is the most likely route of transmission from a patient when a member of staff has an uncovered wound on their finger?
- A** Aerosol spray
 - B** Airborne droplets
 - C** Direct entry
 - D** Inoculation

- 14 Hand hygiene is important in minimising the risk of cross infection in the dental workplace. Which level of hand hygiene aims to significantly reduce the numbers of normally resident microorganisms on the hands?
- A Clinical
 - B Hygienic
 - C Social
 - D Surgical
- 15 There are various levels of cleanliness referred to in the clinical setting. Which one of the following options is the term used when all pathogenic microorganisms and spores have been destroyed by the cleaning method involved?
- A Decontaminated
 - B Disinfected
 - C Socially clean
 - D Sterilised
- 16 Various methods are used in the dental workplace to prevent cross-infection incidents. Which one of the following options is the term used when dirty instruments are physically separated from clean ones during a dental procedure?
- A Barrier method
 - B Surface cleaning
 - C Use of disposables
 - D Zoning
- 17 Which one of the following options identifies the reason for the use of sealed pouches to store instruments in the clinical area of the dental workplace?
- A Allows easy identification of items
 - B Avoids aerosol contamination
 - C Keeps items dry
 - D Keeps items tidy
- 18 Which one of the following options is a suitable disinfectant for the routine cleaning of work surfaces in the clinical area between patients and for use as an impression disinfectant too?
- A Aldehyde
 - B Chlorhexidine gluconate
 - C Isopropyl alcohol
 - D Sodium hypochlorite

- 19** Various items of equipment are used in the dental workplace to assist in infection control processes. Which one of the following items is used to sterilise instruments and render them safe for reuse?
- A** Autoclave
 - B** Distiller
 - C** Ultrasonic bath
 - D** Washer–disinfector
- 20** Which one of the following statements regarding clinical handwashing technique is false?
- A** Antibacterial soap should be used
 - B** Illustrated directions should be present at each handwashing sink
 - C** Rinsing should occur towards the fingers
 - D** Taps should not be hand operated
- 21** Which one of the following options summarises the need for standard precautions to be followed at all times in the dental workplace?
- A** Avoids identifying infectious patients
 - B** Healthy carrier cannot be identified
 - C** Helps isolate infectious patients
 - D** Prevents any staff exposure to infectious patients
- 22** Indirect cross infection occurs when microorganisms are transferred from a contaminated item to another person. Which one of the following techniques will prevent the occurrence of indirect cross-infection incidents?
- A** Decontamination of items
 - B** High-speed aspiration
 - C** Use of disposables
 - D** Zoning of the clinical area
- 23** Many viruses are transmitted from person to person by direct contact with infected blood. Which one of the following options is the correct chemical for use when cleaning away a blood spillage?
- A** Aldehyde
 - B** Chlorhexidine gluconate
 - C** Detergent
 - D** Sodium hypochlorite
- 24** Which one of the following statements regarding the reprocessing of instruments is false?
- A** All instruments should be sterilised before reuse
 - B** Detergent solution should be used when manually scrubbing instruments
 - C** Endodontic files should be discarded after use
 - D** Metal brushes should be used to remove persistent debris

- 25 Which one of the following options is the correct sequence of events to be followed during the decontamination of instruments before sterilisation is carried out?
- A Debride, inspect, rinse and scrub
 - B Debride, scrub, rinse and inspect
 - C Scrub, inspect, rinse and debride
 - D Scrub, rinse, debride and inspect

Answers

- 1 *Correct answer C:* Social handwashing involves the use of general-purpose soap (rather than a special antibacterial hand cleanser) that is worked into a lather to physically clean the hands. This action will remove any general microorganisms from the hand surfaces, such as those acquired by using door handles in public places, taps and toilet flush handles and so on.
- 2 *Correct answer C:* Aerosol spray and particle spatter are everyday occurrences during the delivery of dental treatment and are always likely to occur in this environment. Direct contact with some body fluids (such as saliva or respiratory tract discharge) may occur outside of the immediate clinical area simply by contact with the public, as happens anywhere. However, inoculation injuries should be a rare occurrence if the infection control policy is followed correctly by all dental personnel.
- 3 *Correct answer A:* There are many diseases that can be transmitted without every sufferer becoming ill immediately (if at all), and the infected person is then often unaware that they have been exposed to pathogens. However, they can still pass the disease onto a third person by any of the usual routes of transmission, and that person will also then become infected. This intermediary who shows no signs of disease nor suffers any symptoms is called a carrier, and the likelihood of a healthy carrier unknowingly being treated at some point in a dental workplace forms the basis of the principles of 'standard precautions' – to treat every patient as a possible source of infection.
- 4 *Correct answer B:* This is the standard definition of disinfection, a cleaning process that usually involves the use of chemicals but that only kills some microorganisms, not all of them. Some viruses and the inactive state of bacteria (called spores) are unaffected by disinfection techniques and can be assumed to be present and infective unless more thorough cleaning methods are employed, such as sterilisation.
- 5 *Correct answer B:* Modern dental procedures often involve the use of high-speed hand pieces and ultrasonic instruments that create aerosols and throw particulate matter into the surrounding environment. As the spray produced falls down from the air, all exposed work surfaces can be assumed to become contaminated by any debris and pathogens within it, and they must be wiped over with a suitable surface disinfectant between patients to prevent cross infection.

- 6 *Correct answer B:* Indirect cross infection occurs when contamination from one patient is transferred to an instrument that is then used on a second patient without the contaminant being removed first. Extraction forceps are reusable items, but they must undergo sterilisation to be rendered safe for reuse on other patients. The process of disinfection alone will only remove bacteria, fungi and some viruses, and the forceps may therefore still harbour pathogens that are likely to infect the next patient.
- 7 *Correct answer C:* Disposable items are also referred to as single-use items – they are used on one patient and then safely disposed of, rather than undergoing a sterilisation process and used again on another patient. By disposing of an item after it has been used on just one patient, any contamination or pathogens it may harbour will never have the opportunity of infecting another patient because the item will never come into contact with another patient. The use of disposables is therefore the most effective method of preventing cross infection between patients.
- 8 *Correct answer B:* Handwashing is the main method of minimising the risk of cross infection from one person to another, as our hands come into contact with a multitude of potentially infected surfaces and items on a day-to-day basis, as well as being used for such personal events as nose blowing, self-cleaning after going to the toilet and so on. Of the options listed, handwashing is the only one that involves the removal of potential contamination from a staff member, while the other three options are all concerned with the removal of contamination from a patient after having undergone dental treatment.
- 9 *Correct answer A:* This technique involves covering large equipment items, or their control switches, with a layer of impervious membrane such as cling film. This prevents any direct contact of the equipment by dirty hands or by aerosol contamination during a dental procedure. Once the procedure has been completed, the barrier film is removed and safely disposed of, and a new layer can be placed before treatment begins on the next patient. Items protected in this way include computer keyboards, dental chair control switches, dental light handles and switches and the like.
- 10 *Correct answer C:* Therefore, every patient is always assumed to be potentially infected with a pathogen while attending for dental treatment and treated under standard precautions as if they could infect others at any time. Dental personnel will only be free from those diseases for which they have immunity, and all patients cannot be assumed to have received a full range of childhood vaccinations. A patient may have natural immunity to some diseases, but that will not protect dental personnel from infection by other pathogens.

- 11** *Correct answer B:* The items have been contaminated by body tissue and fluids from the patient during the course of their dental treatment. They are decontaminated by undergoing manual scrubbing or debridement in an ultrasonic bath or a washer–disinfector, so that the body tissue and fluids are removed from their surfaces. They can then undergo sterilisation to ensure that any pathogen contamination is killed before the items are safely reused on another patient.
- 12** *Correct answer A:* A face mask fits snugly over the nose and mouth when worn correctly and will prevent the inhalation of any aerosol spray. A visor protects the face from direct spatter created during dental procedures, but aerosol spray can still be inhaled around its open sides and beneath its open base, and it does not therefore adequately protect the staff member from this source of cross infection. Aerosol spray contamination is a cross-infection risk if inhaled, so the other options are not relevant.
- 13** *Correct answer C:* Normally, the intact skin surface is the first line of the body's natural defence mechanisms against entry by pathogens to cause an infection. An uncovered wound provides a site of direct entry to pathogens through the breach in the skin and directly into the deeper tissue layers. If the wound was covered with a waterproof dressing, this would act as a protective barrier while the skin healed beneath and would also act to prevent the entry of pathogens. Aerosol spray and airborne droplets usually gain entry by inhalation, while an inoculation route involves the piercing of intact skin by an infected sharp implement.
- 14** *Correct answer D:* Surgical handwashing involves the thorough and systematic cleaning of every area of the hands and forearms using a surgical-grade washing solution to significantly reduce the numbers of microorganisms that are normally resident on the skin in these areas. So this is over and above the removal of any acquired microorganisms that the person may also have become contaminated with in their normal activities. This level of hand hygiene is necessary when a person is involved in any invasive surgical procedures.
- 15** *Correct answer D:* This is the standard definition of the process of sterilisation, where not just the pathogens but their inactive spores are destroyed so that items cleaned in this way are termed as aseptic – devoid of all living microorganisms.
- 16** *Correct answer D:* This technique involves the designation of clearly marked sections of workspace within the clinical area – clean and dirty – that are strictly adhered to by all dental personnel working in that area. Only clean

items are placed in the clean section, and only dirty items are placed in the dirty section, and the two areas are physically separated from each other in the layout of the clinical area so that there is no confusion. Often, this separation is achieved by having separate worktops in the two areas or by a sink or other such appliance placed between the two sections. The two areas will also be clearly labelled to avoid any mishaps.

- 17** *Correct answer B:* Even with sterilised items being placed in cupboards and drawers within the clinical area when not in use, there is always the potential for them to become contaminated by aerosol spray while dental procedures are being carried out in the near vicinity. The spray will always be created when hand pieces and ultrasonic scalers are used and may take some time to fall and land onto any available surfaces in the surgery – it will not be apparent because the spray is invisible. Sealing items in pouches provides a physical barrier to this potential source of contamination and guarantees their sterilised status when they are eventually opened and reused.
- 18** *Correct answer A:* Aldehyde is a powerful disinfectant against bacteria, fungi and some viruses and is used as pre-impregnated wipes for effective surface cleaning in the clinical area between patients. It can also be used in solution as an immersion bath for the disinfection of impressions. Sodium hypochlorite is a more powerful disinfectant still, but its choking smell and bleaching abilities make it unlikely to be used routinely throughout a working session. It tends to be reserved for deep cleaning and specialist incidents such as blood spillages when no other disinfectant is suitable. The other two options are not suitable disinfectants for either purpose stated.
- 19** *Correct answer A:* Autoclaves are pressure vessels that heat their contents to a set temperature under pressure and hold them in this state for a set time to ensure that all pathogens are killed. Some work under vacuum, while others draw the steam created during the process over the contents to ensure sterility. Ultrasonic baths act to decontaminate items and washer–disinfectors do as their name states. Distillers are used to convert tap water into distilled water that can then be used to operate these items of cleaning equipment.
- 20** *Correct answer C:* The fingers are the parts of the hand that will come into contact with patients and items or instruments and therefore need to be as clean as possible. By rinsing after clinical handwashing with the water flowing away from the fingers (rather than as stated in the question), all of the used soap solution and any contamination it contains will be guaranteed to be removed from the fingers so that they are clinically clean. All three of the other statements are true.

- 21** *Correct answer B:* A healthy carrier of a pathogenic disease will show no signs nor feel any symptoms of illness and will therefore be assumed to be non-infectious to others. However, they are infectious and can pass on the disease through the relevant transmission route to any person they come into contact with – this is how diseases can spread uncontrollably. The main principle of standard precautions is to assume that every person can be an unidentified healthy carrier of any disease and to treat every person as if they are just that. So full infection control procedures are used across the board when treating any patient, whether they show signs of illness or not, and the risk of transmission is reduced massively.
- 22** *Correct answer C:* If contaminated items are disposed of after a single use on one patient only, there is no risk of transmission to another person by reuse. None of the other options will prevent indirect cross-infection incidents.
- 23** *Correct answer D:* Sodium hypochlorite (bleach) at a 1% concentration is the only recommended solution to be used to clean away a blood spillage effectively. It is more effective against viruses (including HIV and hepatitis B) than aldehyde solution, and the other two options are not viricidal and must not be used for blood spillages.
- 24** *Correct answer D:* Microscopically, the use of metal brushes to remove persistent debris can cause scratching of the metal surface of instruments, which then makes them more likely to harbour pathogens when used again and therefore more likely to cause cross infection. All three of the other options are true.
- 25** *Correct answer A:* Debridement is performed by placing the items into either an ultrasonic bath or a washer–disinfector for the correct time period and using the correct chemicals. This renders the items safe to be handled while wearing clean PPE, so that they can be visually inspected for residual contamination, rinsed and then manually scrubbed to remove this contamination before being autoclaved.

