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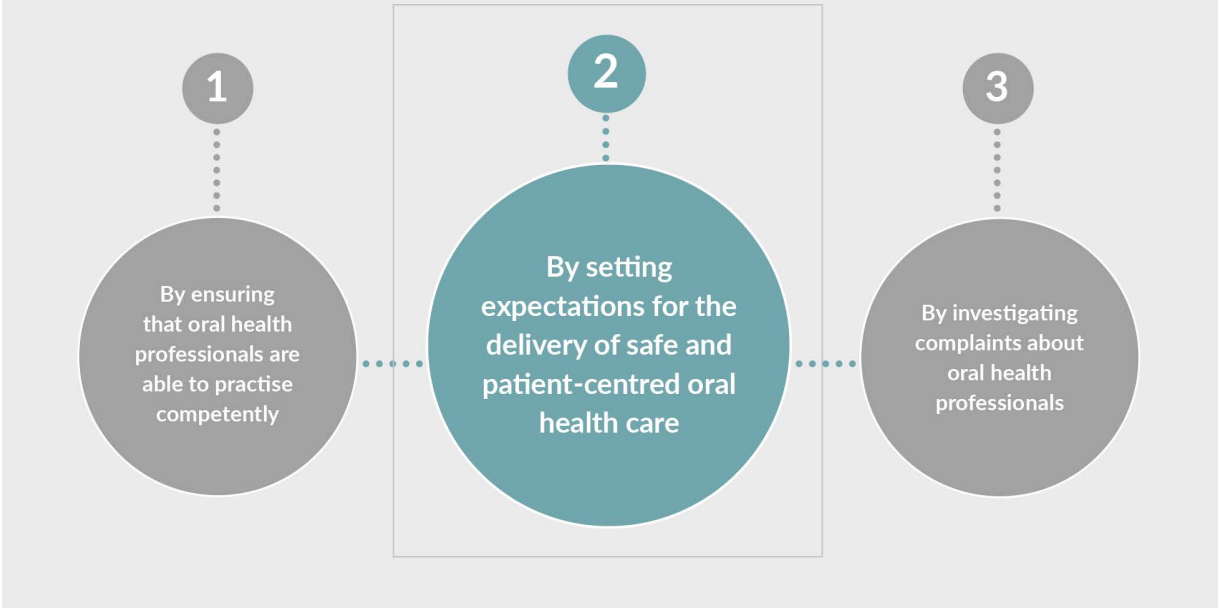
Expectations for clinical and ethical practice

SUGGESTED INFECTION PREVENTION & CONTROL MEASURES FOR DENTURISTS

Applies to Denturists

There are three main ways that the BC College of Oral Health Professionals protects the public:



The British Columbia College of Oral Health Professionals (BCCOHP) was created on September 1, 2022 through the amalgamation of four health regulatory colleges: the College of Dental Hygienists of BC, the College of Dental Surgeons of BC, the College of Dental Technicians of BC, and the College of Denturists of BC. All current requirements for standards of clinical and ethical practice issued by the four colleges remain in place upon amalgamation. This document was created by the College of Denturists of BC and will be updated to reflect the amalgamation.

SUGGESTED INFECTION PREVENTION & CONTROL MEASURES FOR DENTURISTS

V.2 – APPROVED AUG. 8/9, 2019

Developed by The Denturist Association of Canada

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L'Association des denturologistes du Canada

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Suggested Infection Prevention and Control Measures for Denturists V.2., Approved August 8/9, 2019

Disclaimer

The sample documents below of the **Suggested Infection Prevention and Control Measures for Denturists** are provided for general information purposes only. Your use of any of these documents is at your own risk, and you should not use any of these documents, without first researching the protocols set out by your governing bodies in your province.

Introduction

Denturists have an obligation to maintain the standards of practice of the profession and, accordingly, must ensure that recommended infection prevention and control procedures are carried out.

Denturists must maintain current knowledge of infection prevention and control procedures and apply and maintain them appropriately and consistently. To this end, it is the Denturist's responsibility to ensure that staff are adequately trained in infection prevention and control procedures, and that the necessary supplies are available, fully operational, up to date and routinely monitored for efficacy.

In addition to professional obligations, Denturists have an ethical duty to maintain a safe & healthy office environment for both patients and staff, to adhere to all rules and regulations related to the operation of a Denturism practice, including workplace health and safety and environmental protection.

The goal of an infection control program is to prevent the transfer of pathogens between contaminated items and between contaminated items and individuals.

Key Administrative Recommendations for Denturist Practices:

1. Develop and maintain infection prevention and occupational health and safety programs.
2. Provide supplies and training necessary for adherence to standard precautions (e.g. hand hygiene products, safer devices to reduce percutaneous injuries, personal protective equipment).
3. Assign at least one individual trained in infection prevention and control responsibility for coordinating the program.
4. Develop and maintain written infection prevention and control policies and procedures appropriate for services provided by the practice and based on evidence-based guidelines, regulations, or standards.

All Oral Health Care Professionals hold the responsibility of infection control. Historically, the profession of dentistry has been at the forefront of developments in infection control in ambulatory health care settings. Due to the biologic and microflora realities of the oral environment, creating a medical surgical operating room level of sterility is not necessary. Furthermore, it is virtually impossible to provide dental care in a completely sterile environment but it is necessary to strive to efficiently create an environment which is as pathogen free as possible.

Transmission of infections among patients in denture clinic settings is rare. However, from 2005 to 2015, transmission in dental settings, including patient to patient transmissions has been documented. In most cases, investigators failed to link a specific lapse of infection prevention and control with a particular transmission.

However, reported breakdowns in basic infection procedures included failure to heat sterilize dental hand pieces between patients and failure to monitor autoclaves (eg. Conduct spore testing).

Transmission of Micro-organisms

Understanding the modes of transportation of infection is necessary for designing and implementing effective infection prevention and control strategies.

Denture patients and Denturists can be exposed to pathogenic micro-organisms including viruses (e.g. HBV, HCV, HIV, human herpes group of viruses, human papilloma virus), bacteria (e.g. mycobacterium, tuberculosis, staphylococci, streptococci) and other microbes that colonize or infect the oral cavity and respiratory tract.

In the Denturist office, the three main modes of transmission of micro-organisms are;

Direct Transmission – direct physical contact with blood, oral fluids or other materials.

Indirect Transmission – contact with an intermediate contaminated object such as dental instrument, equipment or an environmental surface.

Droplet Transmission – contact of oral, nasal or conjunctival mucosa with droplets, spatter or spray containing micro-organisms generated from an infected person, such as by coughing, sneezing or talking.

Standard Precautions

Standard precautions are the minimum infection prevention practices that apply to all patient care, regardless of suspected or confirmed infection status of the patient, in any setting where health care is delivered. These practices are designed both to protect the Denturist and prevent oral health care providers from spreading infections between patients.

Standard precautions include;

- Hand Hygiene
- Use of personal protective equipment (PPE) (e.g. Gloves, masks)
- Immunizations
- Respiratory hygiene/cough etiquette
- Sterile instruments and devices
- Clean and disinfected environmental surfaces

Each element of standard precautions is described in the following sections.

Note: When standard precautions alone cannot prevent transmission, they are supplemented with Transmission Based Precautions. This second tier of infection prevention is used when patients have diseases that can spread through contact, droplet or airborne routes (skin contact, sneezing or coughing) and are always used in addition to standard precautions.

Hand Hygiene

Hand hygiene is the single most important measure to prevent the spread of infections among patients and Denturists.

For routine examinations and procedures, use water and plain handwashing soap or antimicrobial soap specific for health care settings or use an alcohol-base hand rub. Although alcohol-based hand rubs are effective for hand hygiene in health care settings, soap and water should be used when hands are visibly soiled. For all types of hand hygiene products, follow the manufacturer's instructions. If hands are not visibly soiled, the use of 70 – 90% alcohol-based hand rub is the preferred method to perform hand hygiene.

This includes;

- Before and after direct contact with individual patients;
- After contact with environmental surfaces, instruments or other equipment,
- After contact with laboratory materials or equipment,
- Before eating or drinking,
- After personal body functions.

Liquid soap should be provided in disposable pump dispensers. Bar soap should **NOT** be used. Hand lotions to prevent dry or cracked skin should also be available in disposable dispensers. Petroleum based hand lotions should **NOT** be used because they can affect glove integrity. To avoid contamination, disposable pump dispensers should be discarded and **NOT** refilled.

Despite perceptions to the contrary, alcohol-based hand rubs have been shown to be less irritating than soap and water.

Hand Hygiene facilities should be located as close as possible to operatories and preferably in sight of the patient.

- Soap dispensers should be placed at every sink.
- Alcohol-based hand rub should be strategically placed for ease of use.
- Disposable towels should be readily available at each location.
- A hand-sink should **NOT** be used for any other purpose. Do **NOT** clean equipment or discard waste in the hand sink. Always keep equipment away from the sink to avoid contamination.

Protective Equipment (PPE)

Denturists wear personal protective equipment to help protect themselves from exposure to potentially infectious material. This also protects patients by preventing the Denturist from becoming a vector for the transmission of micro-organisms from patient to patient.

Protective Draping

Single use bibs or drapes should be used to protect patients clothing and reduce their exposure to spatter and debris during oral procedures. Single use strips may be used to secure bibs and drapes, in place of reusable daisy chaining.

Eye Wear

Large particle droplets of water, saliva, blood, micro-organisms and debris are created by the use of dental hand pieces, ultrasonic instruments and air/water syringes. This visible spray typically travels only a short distance and settles out quickly, landing on nearby surfaces including the operatory countertop and equipment, as well as the Denturist and patient (and patient representative, if present).

The face of the Denturist should be protected from spatter and debris during treatment procedures, in the laboratory and in the sterilization and disinfection area when mixing and pouring chemicals.

- Protective eyewear must be made of high-impact plastic and designed to provide complete coverage over and around the eyes, including solid (not vented) side shields.
- Face shields are recommended if side shields are not used.
- Protective eyewear is placed before patient treatment and removed with gloves in place after treatment.
- The eyewear can remain in place but should not be touched with ungloved hands.
- Protective eyewear should be disinfected after use.
- Protective eyewear should be made available upon request to each patient and disinfected after use.

Gloves

Gloves are worn to protect the Denturist's hands from contamination. Since gloves are not completely free from leaks and may tear, their use does not replace the need for hand hygiene. Therefore, effective hand hygiene protocols should be followed before donning gloves and after removing them.

- Gloves must be worn when contact with mucous membranes, non-intact skin or bodily fluids is anticipated.
- The same pair of gloves should not be used for more than one patient.
- Gloves should be put on immediately before the activity for which they are indicated.
- Gloves must be removed and discarded immediately after the activity for which they were used, and then hand hygiene must be used.
- Gloves should not be worn outside any room or area where they are required for personal protection.
- Gloves must **NOT** be washed and re-used.

- Double gloves may be utilized for some specific procedures which may involve the handling of multiple instruments or during longer appointments. However, if used, double gloving should be procedure specific not patient specific.

Latex sensitivity and allergies

In addition to being the appropriate size, gloves must not be irritating to the skin. Some individuals might have sensitivity to or even allergies to chemicals used in glove manufacturing, the powder used inside the glove, or to the naturally occurring latex proteins in latex gloves.

Reactions may range from irritant contact dermatitis to an actual allergic response. Not all reactions are due to latex exposure. It is important to have any reaction definitively diagnosed.

Not only gloves, but other dental products may contain latex, such as dental dams and the straps on face masks. It is important to identify all latex containing products so they can be replaced with non-latex materials or avoided when a patient or staff is allergic.

Masking

The use of an approved face mask will protect the Denturist from micro-organisms during various dental and laboratory procedures. It prevents them from inhaling and exhaling potentially infectious materials to and from the patient. The mask is an effective barrier until it becomes wet. The mask changes when soaked with moisture, reducing its filtration ability and may actually draw moisture to them.

- The best masks are those that have bacterial filtration efficiency (BFE) of at least 95% of small particles that directly contact the mask.
- A proper fit is required for both comfort and barrier efficiency.
- Masks should be changed with each patient or when they become wet. There are no recommended timeframes for mask changing, however, by using logic in considering the patient situation, you may then judge when a mask needs to be changed. If a plastic face shield is worn, the appropriate face mask should be worn.
- The mask should be donned before the gloves for ease of placement.
- The mask is adjusted to facial configurations for proper adaptation.
- A mask should not be allowed to hang below the Denturist's chin after use; complete removal of the mask is recommended.

Immunization

Immunizations substantially reduce the Denturist's susceptibility to infectious disease, as well as the potential for disease transmission to other staff and patients. Therefore, immunizations are an essential part of infection prevention and control programs.

It is generally accepted that the Denturist is far more at risk from Hepatitis B virus, or HBV, than from the human immunodeficiency virus (HIV) that causes AIDS. However, because of increasing acceptance of the HBV vaccine among practicing Denturists in recent years, the risk of HBV infection is generally limited to those who have not been vaccinated. Patients with Hepatitis or who are HBV carriers can be treated safely or with minimal risk of transmission of disease in the Denturist's clinic when infection control procedures are used. HIV appears to be much more difficult to transmit than HBV but there is confidence that the same procedures will prevent transmission of HIV in the Denturist's clinic.

All Denturists should be adequately immunized against the following diseases;

- Hepatitis B
- Measles
- Mumps
- Rubella
- Varicella
- Influenza
- Diphtheria
- Pertussis
- Tetanus
- Polio

It is important that all Denturists know their personal immunization status and ensure that it is up to date. All Denturists should consult with their family physician about the need for immunizations, as well as tuberculous skin testing. In addition, the Canadian Immunization Guide sets out recommendations and schedules for adults, including those in the provision of oral health care.

Hepatitis B is the most important vaccine-preventable infectious disease for all workers engaged in health care. The risk of being infected is a consequence of the prevalence of virus carriers in the population receiving care, the frequency of exposure of blood and other bodily fluids, and the contagiousness of Hepatitis B Virus (HBV). Therefore, immunization against HBV is strongly recommended for all Denturists who may be exposed to blood or bodily fluids.

Management of Exposure Includes:

- General wound care and cleaning;
- Counselling of the exposed worker regarding blood borne pathogens;
- Source patient testing, if possible, for HBV, HCV and HIV (of course the consent of the source patient is required);
- Documentation of the incident with a review of the cause to determine if such exposures can be prevented in the future;
- Post-exposure assessment and prophylaxis for the worker, if indicated;
- Baseline and follow-up serology of the worker, if indicated.

A person who is competent in the management of exposure to blood borne pathogens should carry out the post-exposure assessment. Transmission of Hepatitis B carries the greatest risk for the non-immune worker. Those that have not been immunized should begin a vaccine series at the first assessment. Hepatitis B immune globulin (HBIG) should be given within 72 hours if the source patient is positive for Hepatitis B surface antigen. Workers who have completed the vaccine series and who have not been documented to have mounted an adequate antibody response should be tested following an exposure to ensure they are immune. Those that have responded to the vaccine can be considered immune. Workers exposed to Hepatitis B that do not have immunity at the time of the exposure and who have not previously displayed a response to Hepatitis B immunization should receive a dose of HBIG and another series of the vaccine.

Exposure to HIV infected blood is uncommon in the Denturist setting and the risk of transmission is low. However, issues surrounding transmission of this pathogen tend to result in the greatest anxiety following exposure to blood. Exposure is considered significant if it involves blood or other body fluids. HIV does **NOT** transgress intact skin. Thus, blood or body fluids must penetrate the skin or come into contact with the mucous membranes or broken skin. The risk of transmission increases with depth of exposure, degree of contamination of the penetrating device and level of virus in the source blood.

Antiviral prophylaxis for one month following workplace exposure to HIV provides a 5-fold reduction in the risk of transmission. Drug toxicity generally limits the use of this approach to incidents in which the source patient is known to be positive or is at high risk of infection.

Antiviral drugs should be initiated within 2 hours of exposure, if possible. Rapid screening (within 24 hours) of the source patient is possible in most populated areas. Workers with documented exposure to HIV require 6 months of follow-up to rule out infection.

Unfortunately, no vaccines or prophylactic drug treatments prevent the transmission of Hepatitis C. For those who have had significant exposure, baseline liver enzymes should be recorded and Hepatitis C serology should be carried out with repeat testing at 6 weeks, 3 months and 6 months. People whose liver enzymes become elevated or have a positive antibody test should be urgently referred to a specialist in managing Hepatitis C.

Respiratory Hygiene/Cough Etiquette

Respiratory hygiene/cough etiquette infection prevention measures are designed to limit the transmission of respiratory pathogens spread by droplet or airborne routes. The strategies target primarily patients and individuals accompanying patients to the Denturist office who might have undiagnosed transmissible respiratory infection, but also apply to anyone (including all Oral Health Care Providers) with signs of illness including cough, congestion, runny nose or increased production of respiratory secretions.

Staff should be educated on preventing the spread of respiratory pathogens when in contact with symptomatic persons. Respiratory hygiene and cough etiquette were added to Standard Precautions in 2007.

Key Recommendations

- Implement measures to contain respiratory secretions in patients and accompanying individuals who have signs and symptoms of a respiratory infection, beginning at the point of entry and continuing throughout the visit.
- Provide tissues and no-touch receptacles for disposal of tissues.
- Provide area for performing hand hygiene in or near waiting areas.
- Offer masks to coughing patients and other symptomatic persons when they enter the Denturist setting.
- Provide space and encourage persons with symptoms of respiratory infection to sit as far away from others as possible.
- Educate all staff on the importance of infection prevention measures to contain respiratory pathogens when examining caring for patients with signs and symptoms of respiratory infection.

Reprocessing Room/Area

The reprocessing room/area must have designated clean and dirty areas with enough space to clean the instruments and tools as well as to lay the clean instruments and tools out once they have been cleaned and sterilized. The floors in your reprocessing room must also have slip proof flooring that can be cleaned and mopped with hospital grade disinfection products. Your reprocessing room must also follow the hand hygiene protocols which include a sink for washing hands, an easily accessible liquid hand soap dispenser and either an alcohol-based hand sanitizer dispenser or a hand sanitizer bottle for hand disinfection. Disposable towels should also be readily available for the staff to dry their hands with.

Cleaning, Disinfecting and Sterilization of Patient Care Items

Instrument processing requires multiple steps using specialized equipment. Each practice should have policies and procedures in place for containing, transporting and handling instruments and equipment that may be contaminated with blood or body fluids. Manufacturers' instructions for reprocessing re-useable instruments and equipment should be readily available – ideally in or near the reprocessing area. Most single-use devices

are labelled by the manufacturer for only a single use and do not have reprocessing instructions. Use single-use devices for one patient only and dispose of appropriately.

Cleaning, disinfection and sterilization of dental equipment should be assigned to staff with training in the required processing steps to ensure processing results in a device that can be safely used with a patient. Training should also include the appropriate use of personal protective equipment necessary for safe handling of contaminated equipment.

General Considerations

The goals of the safe processing of re-useable patient care items (dental instruments, hand pieces, devices and equipment) include:

- Preventing transmission of micro-organisms to Denturists, staff and patients;
- Minimizing damage to patient care items from foreign material or inappropriate handling;
- Safe handling of chemical disinfectants.

Contaminated instruments should be handled carefully at all times to prevent percutaneous injuries.

All instruments should be properly cleaned, rinsed and dried prior to either disinfection or sterilization. This step is essential as residual organic debris will compromise the sterilization or disinfection process.

Patient care items are categorized as critical, semi critical or non-critical depending on the potential risk for infection associated with their intended use. This classification determines their processing requirements.

Critical items such as surgical instruments and periodontal scalers are those used to penetrate soft tissue or bone. They have the greatest risk of transmitting infection and should always be sterilized using heat.

Semi – Critical items (e.g. mouth mirrors, amalgam condensers, and reusable dental impression trays) are those that come in contact with mucous membranes or non-intact skin (e.g. exposed skin that is chapped, abraded, or has dermatitis). These items have a lower risk of transmission. Because the majority of these semi-critical items are heat tolerant, they should also be sterilized using heat. If a semi-critical item is heat sensitive, it should be replaced with a heat-tolerant or disposable alternative. If none are available, it should, at a minimum be processed using high level disinfection.

Dental hand pieces and associated attachments, including low speed motors and reusable prophylaxis angles, should always be heat sterilized between patients; not with high-level or surface disinfectant. Although these items are considered semi-critical, studies have shown that their internal surfaces can become contaminated with patient materials during use. If these devices are not properly cleaned and heat sterilized, the next patient may be exposed to potentially infectious materials.

Non-critical patient care items that only contact intact skin pose the least risk of transmission of infection. In the majority of cases, cleaning, or if visibly soiled, cleaning followed by a low-level disinfectant is adequate. Protecting these surfaces with disposable barrier might be a preferred alternative.

Cleaning to remove debris and organic contamination from instruments should always occur before disinfection or sterilization. If blood, saliva and other contamination are not removed, these materials can shield micro-organisms and potentially compromise the disinfection or sterilization process. Automated cleaning equipment (e.g. ultra-sonic cleaner, washer-disinfector) should be used to remove debris to improve cleaning effectiveness and decrease worker exposure.

Processing of Critical and Semi-Critical Items

To achieve sterilization, the processing of instruments requires multiple steps. Sterilization is a complex process requiring specialized equipment, adequate space, qualified staff and regular monitoring for quality assurance.

Correct sorting, cleaning, drying, packaging sterilizer loading procedures and sterilization methods should be followed to ensure that all instruments are adequately processed and safe for re-use on patients.

All instruments should be processed in a central area that is designed to facilitate quality control and ensure safety. The instrument processing area should have clear separation of clean and dirty areas with separate sections for;

- Receiving, cleaning and decontamination;
- Preparation and packaging;
- Sterilization;
- Storage.

Receiving, Cleaning and Disinfecting

To prevent percutaneous injuries, contaminated instruments should be placed in a puncture-resistant container at the point of use and then transported to the instrument processing area. Reusable instruments should be received, sorted, cleaned and rinsed in one section of the processing area.

Cleaning involves the removal of debris (organic and inorganic matter). This is achieved by scrubbing with a surfactant, detergent and water, or by an automated process (e.g. ultrasonic cleaner or washer with a cleaning solution). After cleaning, instruments should be rinsed with water to remove detergent residue and visually inspected to ensure all debris have been removed.

The use of automated cleaning equipment can increase productivity, improve cleaning effectiveness and decrease worker exposure to blood and body fluids. Thus, using automated equipment can be safer and more efficient than manually cleaning contaminated instruments.

Gross debris should be removed from instruments prior to placement in an ultrasonic cleaner. In addition, ultrasonic cleaning solutions should be changed daily or more often if they become visibly soiled. Automated washers do not require pre-soaking or scrubbing of most instruments. If cleaning cannot be performed immediately, instruments should be placed in a puncture-proof container and soaked with a detergent or enzymatic cleaner to prevent the drying of organic material and make subsequent cleaning easier and less time consuming. Liquid chemical sterilant or high-level disinfectants should **NOT** be used as holding solutions due to the fixative nature of these chemicals making surfaces more difficult to clean, as well as their general toxicity.

Preparation and Packaging

In another section of the processing area, cleaned instruments should be inspected, assembled into sets or trays, and packaged for sterilization. Critical and semi-critical instruments should be processed in a manner that will maintain sterility during storage. Suitable packaging materials include wrapped perforated instrument cassette, peel pouches of plastic or paper, and woven or non-woven sterilization wraps. Packaging materials should be designed for the type of sterilization process being used. Hinged instruments should be processed open and unlocked.

Sterilization

The sterilization section of the processing area should include the sterilizer and related supplies, with adequate space for loading, unloading and cool down. The area may also include biological indicators and incubators for conducting spore tests, as well as enclosed storage for sterile and single–use disposable items.

Heat tolerant instruments are usually steamed under pressure (i.e. autoclaving) which is dependable and economical. All sterilization should be performed by using medical sterilization equipment registered with Health Canada. Sterilization times, temperatures and other operating parameters recommended by the manufacturer of the equipment used, as well as instructions for correct use of containers, wraps, and chemical or biological indicators should always be used.

Instrument packs should be allowed to dry inside the sterilization chamber before removing and handling, in order to avoid wicking of moisture and hence, contamination with bacteria of hands.

Monitoring of sterilization must be conducted through a combination of mechanical, chemical and biological means, which evaluate both the sterilization conditions and the procedures effectiveness.

The information in this section represents best practices and is consistent with the recommendations of Infection Prevention and Control Canada (IPAC) and the Canadian Standards Association (CDA).

1. Mechanical indicators are the gauges or displays on the sterilizer for cycle time, temperature and pressure. Some tabletop sterilizers have recording devices that print out these parameters, which is preferred. All new sterilizers should have this feature. If your current sterilizer does not have this ability, it is recommended that you upgrade your current sterilizer or purchase a new one.

2. Chemical indicators are sensitive chemicals used to assess physical conditions during the sterilization process. For example, heat-sensitive tape applied to the outside of a package changes color rapidly when a given temperature is reached. This signifies that the package has undergone a sterilization cycle, although it does not ensure that sterilization has been achieved.

A sterilization agent has more difficulty penetrating a hollow object, such as a hand piece, than it does a solid object, such as a dental mirror. Air that is trapped inside these hollow areas cannot be easily removed, thus hindering the sterilizing agent's contact with the internal surface of the instrument. In addition, when items are packaged, the sterilizing agent takes longer to penetrate the instruments. The packaging envelops the instruments, creating a hollow area into which the sterilizing agent must be drawn or forced in. For these reasons, each package must have external chemical indicators. In addition, it is recommended that both internal and external chemical indicators be used to detect penetration of the package.

3. Biological indicators (BI or spore test) are the most accepted means for monitoring sterilization because it directly assesses the procedures effectiveness in killing the most resistant micro-organisms. The spores used are more resistant and present in greater numbers than the common microbial contaminants found on patient care items. Therefore, an inactivated BI signifies that other potential pathogens in the load have been killed.

Include a BI each day a sterilizer is used. In addition, if a load contains implantable devices, it must be monitored with a BI, and these items should be quarantined until the test results are known.

Follow the manufacturer's directions concerning the appropriate placement of the BI in the sterilizer.

In the event of a positive BI (e.g. failed spore test):

- Remove the sterilizer from service.

- Review all records of mechanical and chemical indicators since the last negative BI, as well as sterilization procedures to determine whether operator error could be responsible. In the absence of mechanical failure, common reasons for a positive BI include overloading, failure to provide adequate package separation, and using incorrect or excessive packaging material.
- Repeat the spore test immediately. This should be done after addressing procedural problems and correctly loading the sterilizer, and by using the same cycle that produced the failure. While waiting for the repeat test results, the sterilizer should remain out of service.
- If the repeat spore test is negative, and mechanical and chemical indicators demonstrate adequate processing, then the sterilizer can be brought back into service following three consecutive negative tests.
- If the repeat spore test is positive and all stabilization procedures have been performed correctly, then the sterilizer should remain out of service until it has been inspected, repaired and successfully re-challenged with BI tests in three consecutive empty chamber sterilization cycles. In addition, all items from the suspect loads dating back to the last negative BI should be recalled, to the extent possible, and reprocessed.

Storage

Sterile and single-use disposable items should be stored in an enclosed space, such as closed or covered cabinets. They should **NOT** be stored under sinks or in other locations where they might become wet and contaminated.

Storage practices for packaged sterilized instruments may be either date or event related. Dating assists in the recall of instruments should concerns arise with the results of sterilization tests. Some date every sterilized package and use shelf life practices (e.g. "first in – first out"). Others use event related practices. The latter approach recognizes that the packaged instruments should remain sterile indefinitely, unless an event causes them to become contaminated (e.g. torn or wet packaging).

Packages containing sterile instruments should be inspected before use to verify barrier integrity and dryness. If packaging is compromised, the instruments should be cleaned, packaged and sterilized again.

Sterilization and Unpackaged Items

An unpackaged cycle (sometimes called flash sterilization) is a method for sterilizing patient care items for immediate use. Unpackaged sterilization should only be used under certain conditions;

- Thorough cleaning and drying of instruments preceded unpackaged cycle;
- Mechanical parameters are checked and an internal chemical indicator is used for each cycle;
- Care is taken to avoid thermal injury to staff or patients;
- Items are transported aseptically to the point of use to maintain sterility.

When sterile items are left open to the air, they can quickly become contaminated. Therefore, critical instruments that are sterilized unpackaged should be used immediately and not be stored. Sufficient inventories of critical instruments should be maintained to avoid the need for flash sterilization.

Semi-critical instruments that are sterilized unpackaged on a tray or in a container system should be used immediately or within a short time. Storage, even temporary, of unpackaged semi-critical instruments is discouraged because it permits exposure to dust, airborne organisms and other unnecessary contamination before use on patients.

All implantable devices should be quarantined after sterilization until the results of the biological monitoring are known. Accordingly, unpackaged or flash sterilization of implantable items is inadequate and must **NOT** be used.

Storing of Products/Materials

Offices/Clinics should have two separate refrigerators: one for storing of products/materials and one for storing food such as lunches. If the office/clinic is too small to accommodate two refrigerators, the products/materials must be stored separately (such as the crispers) from the food and must be clearly labelled as to what it is.

Processing Heat-sensitive Items

Semi-critical items that are heat-sensitive should be cleaned and then receive high-level disinfection, which may be achieved by immersion in liquid chemical germicide.

Liquid chemical germicides are highly toxic and their effectiveness cannot be verified with biological indicators. Accordingly, the manufacturer's instructions regarding dilution, instrument preparation, immersion time, temperature and the changing of solutions should be followed carefully. In addition, appropriate precautions should be taken to safeguard staff, including the use of closed containers to limit vapor release, adequate ventilation, chemically resistant gloves, aprons, goggles and face shields.

Following liquid immersion, instruments should be thoroughly rinsed with tap or distilled water to remove toxic or irritating residues then dried with lint-free, clean towels. Liquid chemical germicides should NOT be used for application other than indicated in their label instructions, and they should **NOT** be used as an environmental surface disinfectant or instrument holding solution.

The majority of semi-critical items used in dentistry are available in heat – tolerant or disposable alternatives. Avoid the use of heat-sensitive semi-critical items that must be processed with liquid high-level disinfectant.

Processing Non-Critical Items

Non-critical items pose the least risk of transmission of infection as they either have no contact with the patient or contact only intact skin which serves as an effective barrier to micro-organisms. Non-critical items should be cleaned after use, or if contaminated, cleaned and then disinfected with an appropriate low-level disinfectant.

Cleaning and disinfection of some non-critical items may be difficult or could damage some surfaces. It may be preferable to use disposable barriers to protect those surfaces.

Equipment Use and Preventative Maintenance

Tabletop sterilizers undergo frequent use, wear and tear. The manufacturers' recommendations should be consulted for guidance on a preventative maintenance program, including regular inspections of gaskets and seals.

General Considerations

Policies and procedures for routine cleaning and disinfection of environmental surfaces should be included as part of the infection prevention plan.

Cleaning removes large numbers of micro-organisms from surfaces and should always precede disinfection. Disinfection is generally a less lethal process of microbial inactivation (compared with sterilization) that eliminates virtually all recognized pathogenic micro-organisms but not necessarily all microbial forms (e.g. bacterial spores).

Emphasis for cleaning and disinfection should be placed on surfaces that are most likely to become contaminated with pathogens, including clinical contact surfaces (light handles, bracket trays, switches on dental units, computer equipment), in the patient care area. When these surfaces are touched, micro-organisms

can be transferred to other surfaces, instruments or to the nose, mouth or eyes of the Denturist or patient. Although hand hygiene is the key to minimizing the spread of microorganisms, clinical contact surfaces should be barrier protected or cleaned and disinfected between patients. Disinfectant products should **NOT** be used as cleaner unless the manufacturer's label indicates the product is suitable for such use. Manufacturers' recommendations should always be followed when using products selected for cleaning and disinfection.

Housekeeping surfaces (e.g. floors, walls, sinks) carry less risk of disease transmission than clinical contact surfaces and can be cleaned with soap and water or cleaned and disinfected if the area is visibly contaminated with blood.

Environmental surfaces are divided into clinical contact surfaces and housekeeping surfaces;

Clinical Contact Surfaces

Clinical contact surfaces are frequently touched in the course of patient care. They can become contaminated by direct spray or spatter generated during procedures or by contact with the Denturist's gloved hands or contaminated instruments.

Examples of clinical contact surfaces are;

- Chair controls and switches
- Light handles and switches
- Chairside computers, monitors and keyboards
- Reusable containers of materials
- Drawer and faucet handles
- Countertops
- Pens
- Telephones
- Door knobs

Clinical contact surfaces should be cleaned and disinfected between patients and at the end of the work day using an appropriate low-level disinfectant. To facilitate this, treatment areas should be well organized and kept clear of unnecessary equipment and supplies, especially on countertops. Staff should take appropriate precautions, including wearing gloves while cleaning and disinfecting surfaces to prevent occupational exposure to infectious agents and hazardous chemicals.

Alternatively, clinical contact surfaces and equipment can be protected by the use of barriers. Barriers are particularly effective for those surfaces that are difficult to clean and disinfect due to their shape, surface or material characteristics. Suitable barriers include:

- Clear plastic wrap
- Plastic bags
- Plastic sheets
- Plastic tubing
- Plastic baked paper
- Other moisture-proof materials

Since barriers can become contaminated during procedures, they should be removed and discarded between patients. Following barrier removal, the underlying surfaces should be examined to ensure they did not inadvertently become contaminated. Those that did should be cleaned and disinfected. Otherwise, clean barriers should be replaced prior to the next patient.

Housekeeping Surfaces

Housekeeping surfaces, such as floors and walls have a limited risk of disease transmission. Accordingly, these surfaces usually only require periodic cleaning with diluted detergents. If a surface is suspected of becoming contaminated with blood, saliva or other bodily fluids, it should be cleaned first and then disinfected with appropriate low-level disinfectant. Gloves should be worn for this procedure.

From a general housekeeping point of view, floors should be cleaned regularly and spills should be cleaned up promptly. Cleaning tools, such as mop heads, should be rinsed after use and allowed to dry before they are reused. Fresh cleaning solutions should be made each day, discarding any that remain and allowing the container to dry between uses. In this way, the risk of these solutions becoming reservoirs for micro-organisms can be minimized.

Carpeting and cloth furnishings are difficult to clean and cannot be reliably disinfected. They should not be used in patient treatment or instrument processing areas; however, plastic hard liners overtop of carpet would be acceptable.

General Office Waste

General office waste is no more infective than residential waste. Therefore, the majority of soiled items generated in Denturists' offices do not require any special disposal methods, other than careful containment and removal. Some recommendations for all types of general office waste include;

- Ensure that all garbage containers are water-proof and have tight-fitting lids, preferably operated by a foot pedal. Open waste baskets may be dangerous if children are around them.
- Use plastic bags to line the garbage containers. The use of double bagging is not necessary unless the integrity of the bag is jeopardized or the outside of the bag is visibly soiled.
- Do not overfill garbage containers.
- Do not place sharp, hard or heavy objects in plastic bags that could cause them to burst.

Properly Using a sharps container

Sharps Containers are a puncture resistant container that are designed for the use of properly disposing of syringes and needles, scalpel blades and all other sharp items. Health Canada - cleared sharps disposal containers are made from rigid plastic and come marked with a line that indicates when the container should be considered full, which means it's time to dispose of the container. Sharps containers should be placed as close as possible to the area where these items will be used. Sharps containers should be disposed of according to your provincial and local regulated medical waste rules.

Key Recommendations

- Any sharp items that have been contaminated with patient blood and/or saliva are considered potentially infected.
- Do not recap any used needles.

Place the used disposable syringes, needles, scalpel blades or any other sharp items in the appropriate puncture-resistant container.

Dental Unit Water Lines

Dental unit water lines are made of narrow-bore plastic tubing that can carry water to hand pieces, ultra-sonic instruments and air/water syringes. They become heavily colonized with water-borne micro-organisms,

including bacteria, fungi and protozoa, which form a biofilm on the interior surface of the waterline. However, they are not a supportive environment for bacteria commonly found in the oral cavity. High numbers of these opportunistic micro-organisms are not necessarily dangerous to the general population unless the patient or the Denturist is a susceptible host. This includes persons who are immunocompromised (e.g. persons living with HIV, persons undergoing oncology treatment or organ transplant procedures), and those with cystic fibrosis, chronic bronchitis and bronchiectasis.

The potential risk of infection from dental unit water lines can be effectively reduced to counts similar to those in potable water standards by following regular water line maintenance procedures.

Dental Hand pieces and Other Intra-Oral Devices

Several dental devices that contact mucous membranes are attached to the air or waterlines of the dental unit, including:

- High and low speed hand pieces;
- Prophylaxis angles;
- Ultrasonic and sonic instruments;
- Air abrasion devices;
- Air/water syringe tips

These devices have the potential of retracting oral fluids into their internal compartments, which can then be expelled into the oral cavity of another patient during subsequent use. In order to flush out any patient material that might have entered the turbine, or air and water lines, these devices should be activated to discharge air and water for a minimum of 20 to 30 seconds after each patient use.

Dental hand pieces and other intraoral devices that are attached to air or water lines should be sterilized after each patient use. The manufacturer's instructions for cleaning, lubricating and sterilizing these devices should be strictly followed.

Single-Use Devices

Single-use (i.e. disposable) are designed to be used on one patient and then discarded and not to be reprocessed and used on another patient (examples include prophylaxis cups and brushes). Some items, such as prophylaxis angles, high volume suction tips and air/water syringe tips are commonly available in single-use forms.

Single-use devices are not usually heat-tolerant and cannot be reliably cleaned or disinfected. Therefore, they should be disposed of appropriately after use.

Dental Laboratory Asepsis

Dental prostheses and appliances, as well as items used in their fabrication (e.g. impressions, occlusion rims, and bite registrations) are potential sources for cross-contamination. They should be handled in a manner that prevents exposure of patients, Denturists, or the office environment to infectious agents.

Effective communication and co-ordination between the Denturist and the commercial laboratory will ensure that:

- Appropriate cleaning and disinfection procedures are performed in the office or the laboratory;
- Materials are not damaged or distorted because of over-exposure to disinfectants;
- Disinfection procedures are not unnecessarily duplicated.

Impressions, prosthesis and appliances should be cleaned and disinfected as soon as possible after removal from the patient's mouth, before drying of blood or other organic debris. The manufacturers' instructions regarding the stability of specific materials during disinfection should be consulted. Wet impressions or appliances should be placed in an impervious bag prior to transport to a commercial laboratory and / or in-house laboratory.

Heat tolerant items used in the mouth, such as impression trays or face bow forks, should be sterilized after each patient use. Other items that do not normally come in contact with the patient, but frequently become contaminated, such as articulators and case pans, should be cleaned and disinfected according to the manufacturer's instructions.

Finished prostheses and appliances delivered to the patient should be free of contamination. This can be accomplished with an appropriate low-level disinfectant by either the commercial lab or the dental office.
Items used in the typical in-office laboratory, such as burs, polishing points, rag wheels, laboratory knives and dental lathes frequently become contaminated during adjustments to prostheses and appliances. These items should be sterilized, cleaned and disinfected or discarded after use.

General Aseptic Technique

The mouth is considered a clean-contaminated environment and the patient's own defenses (e.g. antibacterial enzymes in saliva and immune responses) play a large role in healing and preventing infection after a procedure. Infection is usually the result of the patient's own flora.

Aseptic technique is a term used to describe practices that prevent microbial contamination. These practices include environmental cleaning, effective hand hygiene, wearing appropriate clinical attire (e.g. gloves, protective eyewear, masks, gowns), proper handling of clean instruments, wrapping and sterilization, proper handling of sterilized instruments as they are unwrapped and preventing sterile instruments from being contaminated from environmental sources.

For minor dental procedures, hand hygiene is performed, sterile instruments are placed on a clean chair-side area and care is taken to avoid placing unsterilized items near sterilized items. Once the procedure begins, the items are no longer sterile due to contamination with organisms from the patient's mouth, but the goal is to keep the tray and instruments as clean as possible and avoid contamination from other sources. When hands or gloves contact clean surfaces that are frequently touched by others, micro-organisms can be transferred to instruments or other environmental surfaces, and to the eyes, nose and mouth.

In addition to following routine practices and performing appropriate disinfection and sterilization of dental instruments and devices, Denturists can reduce the risk of bacteria from the environment to patients by adhering to some basic steps:

1. Prepare and organize work procedures so that all the required equipment is gathered for the task.
2. Sterilized instruments and devices should be stored in an enclosed space such as closed or covered cabinets. They should remain wrapped until ready for use.
3. Spatially separate work areas and equipment into clean versus contaminated, sterile versus unsterile.
4. Use protective covers and barriers according to office-specific procedures.
5. If an item is needed for a procedure, but not on the procedure tray, it should only be retrieved using transfer forceps or by ensuring the Denturist's hands are clean.
6. Gloves should be applied just before initiating the procedure for the patient.
7. If you observe or suspect that gloves have become torn or perforated, remove them, perform hand hygiene and re-glove where appropriate.

Maintaining aseptic technique is a cooperative responsibility of the entire team. Each member must develop a professional conscience for infection prevention and control, as well as the willingness to supervise and be supervised by others regarding aseptic technique.

Education and Training

Ongoing education and training of all Oral Health Care Providers are critical for ensuring that infection prevention policies and procedures are understood and followed.

Education around basic principles and practices for preventing the spread of infections should be provided to all staff.
Training should include both staff safety and patient safety. Education and training should be provided during orientation to the specific setting, when new tasks are introduced, and, at a minimum, annually.

Key Recommendations

- Provide job or task specific infection prevention education and training to all Oral Health Care Providers. This must include those employed by outside agencies, contract staff, or those volunteering at the facility.
- Provide training on principles for both staff and patient safety.
- Provide training at orientation and at regular intervals (e.g. annually).
- Maintain training records according to provincial and national requirements.

Illness and Work Restrictions

Oral Health Care Providers can minimize the occurrence of contracting illness by practicing the following principle:

- Ensuring adequate and appropriate immunization of all Oral Health Care Workers;
- Rescheduling patients known to be ill;
- Adhering to routine practices, including hand hygiene before and after each patient contact.

As previously noted, hand hygiene is the single most important measure for preventing the transmission of micro-organisms, protecting both staff and patients.

Unique situations that might warrant particular attention by the Denturist include:

- Dermatitis – when the protective skin layer is broken, as happens with chapped hands or eczema, the Denturist is at an increased risk of acquiring and transmitting infection through the exposed area. Good skin care should always be practiced. Any areas of dermatitis should be covered with a bandage, in addition to wearing gloves.
- Immunocompromised staff are at increased risk of becoming infected and may suffer severe consequences. They may also be at risk of shedding viruses (e.g. influenza) for prolonged periods. Where feasible, job functions and associated exposure risks should be evaluated.
- Staff with an upper respiratory illness (e.g. common cold) should take the necessary precautions to prevent the transmission of micro-organisms to patients and other staff. In this case, good hand hygiene is imperative.

Glossary of Terms

Additional Precautions: A term used to describe infection prevention and control interventions that are taken in addition to standard precautions for certain pathogens or clinical presentations, based on the method of transmission (e.g. contact, droplet, airborne).

Airborne Transmission: A means of spreading infection in which airborne droplet nuclei are inhaled by the susceptible host.

Asepsis: The absence of pathogenic (i.e. disease –producing) micro-organisms.

Aseptic Technique: A term used to describe practices that prevent microbial contamination.

Biological Indicator (BI): A device that is used to monitor the sterilization process, which consists of standardized population of bacterial spores known to be resistant to the mode of sterilization being monitored. BIs indicate that the parameters necessary for sterilization were present.

Chemical Indicator (CI): A monitoring device that is designed to respond with a chemical or physical change to one or more of the sterilization process parameters. CIs do not verify sterility, but they do assist in the detection of potential sterilization failure, which could result from incorrect packaging, incorrect loading of the sterilizer or equipment malfunction. There are several classes of CIs:

Process Indicator (Class 1): An external indicator that is used to demonstrate that an item has been exposed to a sterilization process, and to distinguish between processed and non-processed items. Class 1 CIs are usually applied to or visible on the outside of packages (e.g. sterilization tape or packaging printed with color changing inks). Class 1 CIs are directly exposed to the sterilization environment, so they usually fail only when there is a gross malfunction of the sterilizer.

Specialty Indicator (Class 2): An indicator that is designed for use in specific test procedures in special sterilizers (e.g. dynamic air-removal sterilizers). Examples of Class 2 CIs include Bowie Dick and Dart products, which are used for steam sterilizers.

Single-parameter Indicator (Class 3): An internal indicator that responds to only one critical parameter of a sterilization process, usually time or temperature. It is important to note that the sterilization process has more than one critical parameter; all of them must be reached for sterilization to occur.

Multi-parameter Indicator (Class 4): An internal indicator that responds to two or more critical parameters of the sterilization process.

Integrating Indicator (Class 5): An internal indicator that responds to all critical parameters of the sterilization process. Class 5 CIs are correlated to the performance of the Biological Indicators (BI's).

Blood borne Pathogens: Disease producing micro-organisms spread by contact with blood or other body fluids contaminated with blood from an infected person.

Chemical Sterilant: Chemicals used for the purpose of destroying all forms of microbial life including bacterial spores.

Cleaning: The physical removal of foreign material (i.e. organic and inorganic matter) from an object or item using water and mechanical action, with or without detergents. Cleaning removes, rather than kills micro-organisms. Cleaning and then rinsing is performed before further processing.

Contamination: State of having been in contact with micro-organisms. In health care, it generally refers to micro-organisms capable of producing infection or disease.

Decontamination: A process of cleaning, followed by inactivation of pathogenic micro-organisms from objects to render them safe to handle.

Direct Contact Transmission: Physical transfer of micro-organisms between a susceptible host and an infected or colonized person.

Disinfection: A process that kills most pathogenic micro-organisms but rarely kills all bacteria spores. Disinfection is achieved through pasteurization or the use of some chemical agents (i.e disinfectants). The term falls between physical cleaning and sterilization.
There are various levels of disinfection:

High-level Disinfection (HLD): a process capable of killing vegetative bacteria, mycobacteria (including mycobacterium tuberculosis), fungi, and enveloped and non-enveloped viruses, as well as some, but not all bacterial spores. HLD is considered to be the minimum level of decontamination required for semi-critical patient care items. HLD is performed after items are thoroughly cleaned and rinsed.

Low-level Disinfection (LLD): A process capable of killing most vegetative bacteria, as well as some fungi and enveloped viruses. LLD is the level of decontamination required for non-critical patient care items and environmental surfaces. LLD is performed after items are thoroughly cleaned and rinsed.

In-direct Contact Transmission: Contact of a susceptible host with a contaminated, intermediate object.

Irritant Contact Dermatitis: The development of dry itchy, irritated areas on the skin which can result from frequent handwashing and gloving as well as exposure to chemicals. This condition is not an allergic response.

Occupational Exposure: A reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Opportunistic Infection: An infection caused by a micro-organism that does not ordinarily cause disease but is capable of doing so under certain host conditions (e.g., impaired immune response).

Percutaneous Injury: An injury that penetrates the skin (e.g., cut with a sharp object).

Personal Protective Equipment (PPE): Specialized clothing or equipment worn by staff for protection against hazards.

Re-usable Device: A device that has been designed by the manufacturer, through the selection of materials and /or components to be re-used.

Sterilant: Liquid chemical germicide that destroys all forms of micro-biological life, including high numbers of resistant spores.

Surfactants: Active agents that reduce surface tension. They assist in cleaning by loosening, emulsifying and holding soil in suspension, which can then be more readily rinsed away.

Ultra-sonic Cleaner: A device that uses waves of acoustic energy to loosen or break-up debris on instruments.

Washer-Disinfector: An automatic unit used to clean and thermally disinfect instruments. The unit uses a high temperature cycle rather than a chemical bath.

Wicking: Is the absorption of a liquid by capillary action along a thread or through material.

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