# INFECTION PREVENTION AND CONTROL STANDARDS

***In the Oral Health Care Facility***

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## IPC-01-01 – PURPOSE OF THIS DOCUMENT

This document contains practice parameters and standards which must be considered by all Saskatchewan Dental Therapist (SDTA) Registrants in the care of their patients. Compliance with infection prevention and control standards is the responsibility of all Saskatchewan Oral Health Care Professionals (SOHCP), not just the employer, contracting dentist, practice owner or corporate management team.

The major goal of an infection control program is to prevent the transfer of pathogens between contaminated items and individuals. Dentists, denturists, dental hygienists, dental therapists and dental assistants have dealt with the concepts and principles of infection control and infection prevention since early in the histories of these professions. All Oral Health Care Professionals must be responsible for infection prevention and control in oral health facilities in Saskatchewan. Because of the realities of the oral environment, creating a medical level surgical operating room level is not necessary or possible; however, Oral Health Care Professionals must strive to efficiently create an environment which is as pathogen free as possible.

The term Infection Prevention and Control (IPC) and Routine Practices will be used throughout this document, as this phrase identifies the objectives of preventing cross-contamination and controlling infection spread in dental settings.

Due to the nature of infection prevention and control, establishing scientific validity for every recommendation provided in this document is difficult, if not impossible. Wherever possible, these recommendations are based on data from peer reviewed sources (see Reference List).

A limited number of current scientific studies exist that characterize actual risk factors and the effectiveness of procedures. Many infection prevention and control practices routinely used by health-care practitioners cannot be experimentally examined through controlled studies for ethical or logical reasons. In the absence of peer reviewed evidence for such practices, many of these recommendations are based on strong ethical rationale, suggestive evidence, or opinions of respected authorities based on clinical experience, descriptive studies or committee reports. As scientific knowledge regarding infection prevention and control in the dental health-care setting continues to evolve, many of these recommendations will be validated, others will be challenged, and new ones may be added.

The protocols in this document are intended to protect all oral health care personnel and their patients from infectious disease transmission. SDTA Registrants must apply this information as their standard of practice in a diligent, conscientious manner.

In this document, other personnel refer to the variety of paid and unpaid personnel in the dental health-care setting who might be exposed to infectious materials, including body substances (blood, saliva, etc.) and contaminated supplies, equipment, environmental surfaces, water, or air. Other personnel may refer to dental hygienists, dental assistants, dental therapists, dental laboratory technicians (on-site and commercial), denturists (on-site and commercial), students and trainees, contractual personnel, as well as other personnel who may not be directly involved in patient care but may be potentially exposed to infectious agents (administrative, clerical, housekeeping, maintenance, or volunteer personnel).

## IPC-01-02 – ETHICAL CONSIDERATIONS

SDTA Registrants have a professional duty to cause no harm to their patients, and to provide a safe working environment for all SOHCP and other personnel in their practice. Due to the biologic nature of the oral cavity, as well as the nature of dental and oral health care, transmission of infectious diseases before, during or after dental and oral health care is possible. The oral health professions in Saskatchewan have a long tradition of providing appropriate and compassionate care to the public. Individuals with infectious diseases should have access to oral health care. This care and treatment should provide for the well-being of these patients/clients, as well as for the protection of the health of the public and all SOHCP and other personal.

- As professionals with a unique body of knowledge and skills rendered by their educational preparation and license to practice, SDTA Registrants recognize a moral and ethical requirement to provide necessary dental treatment to all members of the public without discrimination. Accordingly, all SDTA Registrants must not refuse

to treat a patient on the grounds of the patient's infectious state.

- People living with infectious diseases may, however, be severely or profoundly medically compromised as a result of those infectious diseases. Such individuals may have severe hepatic or renal dysfunction, coagulopathies, respiratory depression, altered states of consciousness and may be taking multiple medications which may interact or interfere with planned oral health care.
- SDTA Registrants providing oral health care to individuals must be familiar with oral manifestations of specific infectious diseases. To provide appropriate oral health care, the SDTA Registrants must be aware of oral and systemic effects of medications, potential interactions with other medications, as well as treatment modifications.
- When a patient with an infectious disease is medically compromised, a multidisciplinary hospital setting may be a safer location for treating the patient. Treatment may be delayed until the disease is controlled or not in an infectious state.
- SDTA Registrants with an infectious disease do not normally pose a significant risk of infecting patients, other personnel or the public, provided he or she is practicing current recommended infection prevention and control procedures. Reporting is not mandatory for SDTA, however, if the condition has either immediately affected, or may affect over time, his or her ability to practice safely and competently, the SDTA Registrant should inform his/her licensing authority of the infectious status. Appropriate measures, including possible review by an expert panel, will then be taken to ensure the protection of the public and other personnel.
- The SDTA Registrant has an obligation to maintain the standards of practice of the profession and, accordingly, must ensure that infection prevention and control procedures are followed. Only products specifically designed for infection prevention and control must be utilized in a dental health-care setting.
- SDTA Registrants have an obligation to maintain knowledge of infection prevention and control procedures and to apply these procedures.

## IPC-01-03 – PRINCIPLES OF INFECTION PREVENTION AND CONTROL IN THE DENTAL SETTING

Modes of Transmission

Pathogens can be transmitted in oral health care settings through:

- Direct transmission Direct physical contact with blood, oral fluids, or other substances from infected patients.
- Indirect transmission Contact with an intermediate contaminated object (instruments, computer/electronic equipment, or environmental surfaces).
- Droplet transmission Contact of conjunctival, nasal, or oral mucosa with droplets (spatter) containing microorganisms generated from an infected person and propelled a short distance (by coughing, sneezing, or talking).
- Airborne transmission Inhalation of aerosols or microorganisms that can remain suspended in the air.
- Other transmission Contact with a vehicle such as food or water causing the transfer of the pathogen.

Criteria for infection

Infection transmission through any of these routes requires that all of the following conditions are met:

- The presence of a pathogenic organism of sufficient virulence and in adequate numbers to cause disease;
- The presence of a reservoir or source that allows the pathogen to survive and multiply (for example - blood);
- The presence of a vehicle of transmission from the source to the host;
- The presence of an appropriate portal of entry through which the pathogen can enter the host (for example - needle-stick injury);
- The presence of a susceptible host (someone who is not immune).

The simultaneous occurrence of these criteria for infection transmission is referred to as the chain of infection. Effective

infection prevention and control procedures must interrupt one or more links in this chain.
Medical histories and symptomology, whether written or verbal, physical examinations and laboratory tests may not always reveal the presence of an infectious process, disease, carrier state or pre-symptomatic phases of disease in an individual.
To prevent the spread of pathogens, SDTA Registrants must apply infection prevention and control procedures during patient care using the concept of Routine Practices. This concept is combined with the older term of Universal Precautions and Standard Precautions (the need to treat blood and body fluids from all patients as potentially infective) with body substance isolation (designed to reduce risk of transmission of pathogens from moist body surfaces). Thus, Routine Practices are based on the premise that all patients are potentially infectious, even when asymptomatic, and that the same safe standards of practice should be used routinely with all patients to prevent exposure to blood, body fluids, secretions, excretions, mucous membranes, non-intact skin or soiled items and to prevent the spread of microorganisms.
SDTA Registrants must understand that consistency in the implementation and practice of these standards ensures a safer environment for the patient, and other oral health care providers.

# PERSONNEL HEALTH

## IPC-02-01 – GENERAL CONSIDERATIONS

The SDTA IPC Standards and Facility Manual must be reviewed, dated and signed annually by all employees of the facility.
The Facility Manual must include the following elements:

- Policies that describe routine practices for all oral health care procedures within the facility
- Identification of an IPC Officer (any SOHCP) assigned to create, maintain, coordinate and evaluate the infection prevention and control policies. The officer's duties include the education of SOHCP and other personnel regarding the principles of infection prevention and control, identifying work-related infection risks, instituting preventive measures, and ensuring prompt exposure management and medical follow-up.
- IPC Standards describe the policies used during the pre-treatment, treatment and post- treatment periods of patient care respectively. Daily, weekly and monthly routines should be outlined as well.
- Policies must include, but are not limited to, a record of immunization of staff, all local and provincial guidelines, as well as a record of all exposures to infectious agents, and the actions taken in accordance with Health Information Protection Act (HIPA) Regulations
- Guidelines for education and training (documented in employee file).
- Exposure prevention and post-exposure management.
- Location of first aid kit and eye wash station.
- Facility protocol regarding medical conditions, work-related illness, and associated work restrictions.
- Facility protocol regarding contact dermatitis and latex hypersensitivity.
- Documentation of sterilizer monitoring (dated and signed by sterilization monitor) and protocol in place for sterilizer malfunction.
- A record of infection prevention and control equipment maintenance. (Ultrasonic instrument cleaners and heat sterilizers).
- The location of the Exposure Document. (IPC-02- 08)

Oral Health Care Facilities must be aware of and follow the Saskatchewan Health Authority emergency protocols for infectious diseases.

## IPC-02-02 – EDUCATION AND TRAINING

IPC practices are improved when SDTA Registrants and other personnel understand the reasons why the policies exist.
SDTA Registrants and other personnel must receive IPC training as part of their practice orientation and whenever new tasks or procedures are introduced. Additionally, SDTA Registrants and other personnel must receive an annual IPC Standards review. Education and training should be appropriate to the assigned duties of specific personnel.

For SDTA Registrants and other personnel who perform tasks or procedures likely to result in occupational exposure to infectious agents, their training must include:

- A description of each individual's exposure risks,
- A review of prevention strategies and infection- control policies and procedures,
- A discussion regarding how to manage work- related illness and injuries, including Post Exposure Prophylaxis,
- A review of work restrictions for the exposure or infection as per facility manual.

Educational materials should be appropriate in content and vocabulary for each person's educational level, literacy and language as well as consistent with existing federal, provincial and municipal regulations. All education and training courses must be documented.

## IPC-02-03 – IMMUNIZATIONS

Immunizations for vaccine-preventable diseases substantially reduce both the number of SOHCP susceptible to infectious diseases and the potential for disease transmission to others.

It is recommended that all SOHCP evaluate their immunization status and complete the recommended vaccinations and boosters as necessary.

Employers need to be aware of immunization recommendation for health care workers (HCW)as noted in the Canadian Immunization Guide and other updated recommendations from the Public Health Agency of Canada. It is recommended that all SDTA Registrants should be adequately immunized against the following diseases:

- hepatitis B
- measles
- mumps
- rubella
- varicella
- influenza (annual)
- diphtheria
- pertussis
- tetanus (every 10 years)
- SARS CoV-2

Employers have a duty to inform workers about recommended immunizations, arrange for workers to receive these immunizations during normal working hours, and reimburse workers for the associated costs (Occupational Health and Safety Regulations, Section 85). The employer/workplace can make immunization mandatory for new employees. Those employees who decline any vaccinations may be required to sign waivers limiting employer liability.

## IPC-02-04 – HEPATITIS B IMMUNIZATION

SDTA Registrants are at increased risk of acquiring Hepatitis B because of their occupational setting. Therefore, all SDTA Registrants should have been immunized against Hepatitis B, or be provided Hepatitis B immunization by their employer. Most oral health care educational institutions have made Hepatitis B immunization mandatory.

SDTA Registrants must be tested for the presence of adequate amounts of Hepatitis B surface antibody approximately 1-2 months following completion of the 3- dose vaccination series. Serologic testing should produce antibody levels of anti-HBs ≥10 mIU/mL.

SDTA Registrants who do not develop an adequate antibody response (anti-HBs <10 mIU/mL) to the primary vaccine series must complete a second 3-dose vaccine series or be evaluated to determine if they are HBsAg- positive.

Re-vaccinated persons must be re-tested for anti-HBsat the completion of the second vaccine series. If an inadequate antibody response occurs following the second series of immunizations, testing for HBsAg should be performed.

Persons who prove to be HBsAg-positive or HBeAg-positive should report to their regulatory authority, consider counselling regarding HBV transmission and the need for medical evaluation

## IPC-02-05 – EXPOSURE PREVENTION

Exposure to blood through percutaneous injury, contact with mucous membranes of the eye, nose or mouth, and non-intact skin are the primary modes of transmission of exposure to blood-borne pathogens. Percutaneous exposures involve the greatest risk for transmission and include needle-sticks or cuts with contaminated sharp objects. Non-intact skin includes all exposed skin that is chapped, abraded or has dermatitis.

Avoiding contact with blood, any other body tissues or fluids should be of paramount importance in any infection prevention and control program.

The majority of exposures in an oral health-care facility may be preventable by using:

- Routine Practices
  Routine Practices includes hand hygiene, the use of personal protective equipment (PPE), including but not limited to the use of gloves, masks, protective eyewear or face shields and protective clothing (see IPC-03-01).
- Engineering Controls
  Engineering controls are technology-based designs for equipment, and devices intended to reduce percutaneous exposures. Examples include automated instrument washers and dental units designed to shield burs on handpieces.
- Work-Practice Controls
  Work-practice controls are those facility practices established to reduce aerosols, handling, using, assembling or cleaning contaminated sharp instruments, equipment or appliances, and to ensure the proper use of sharps containers. Sharps include but are not limited to needles, scalers, laboratory knives, burs, explorers, endodontic files and reamers.

Work-practice controls may include, but are not limited to:

- High volume evacuation must be used in a heavy aerosol environment for example with ultrasonic use and highspeed handpieces.
- Avoiding or using extreme caution when passing sharps during four-handed dentistry.
- Not passing needles between SOHCP during four handed dentistry.
- Removing burs before removing the handpiece from the dental unit.
- Not using fingers in tissue retraction or palpation during suturing and administration of anesthesia.
- Identifying and removing all sharps from an instrument tray prior to instrument cleaning.
- Placing all syringes and needles, scalpel blades and other sharp items in approved puncture- resistant sharps containers located at point of care or as close as feasible to where the items were used.
- Using puncture resistant containers labelled biohazard and disposing according to municipal regulations.
- Capping all needles prior to and immediately after use, including changing the carpule and discarding.
- Not manipulating or bending needles by hand or handling them so that they are not pointed towards any part of a SDTA Registrants or other personnel's body.
- Recapping needles using a needle guard, a one- handed scoop technique, or an engineered sharps injury protection device (needles with re- sheathing mechanisms).
- Capping needles before removing the needles from the syringe for disposal.
- When using one needle for multiple injections on the same patient, the needle must be recapped between each use.
- Considering the use of one needle per injection to minimize risk of infection from needle stick.
- Using extreme caution when contaminated sharp instruments are passed between SOHCP or other personnel during four-handed dentistry.
- Keeping instruments organized on the work surface to reduce the risk of sharps injury.
- Using extreme caution whenever contaminated sharp instruments are processed for sterilization. Wearing sturdy

- puncture resistant utility gloves for instrument processing and keeping in mind that no glove is foolproof and avoid handling these instruments by the handful.

## IPC-02-06 – EXPOSURE MANAGEMENT

Exposure to blood or saliva by percutaneous injury is the greatest risk for acquiring a bloodborne pathogen in the dental-care setting. Every effort should be made by all SOHCP to avoid percutaneous injury.

Significant Exposures must be dealt with immediately, and exist when any of the following events occurs:

- Percutaneous injury, where the skin of a SDTA Registrant is punctured by a contaminated needle or sharp instrument (blood is released).
- Blood, saliva or other body fluid is splashed onto non-intact skin (dermatitis, cuts or abrasions).
- Blood, saliva or other body fluid is splashed onto mucosa of the eyes, the mouth or the nose.

Exposure to a patient's blood or saliva on intact skin is not considered significant.

Exposure Management Protocol

- Remove gloves or immediate clothing, if necessary, to assess the extent of the injury.
- Immediately allow wound to bleed freely but do not squeeze it. Then wash the area, including the puncture or wound using soap and water. Exposed eye, mouth or nose mucosa should be flushed with copious amounts of sterile water.
- Do not apply caustic agents such as bleach or inject antiseptic agents into the wound.
- Report the injury to the facility Infection Prevention and Control Officer. The officer must complete the Exposure Document which the SDTA Registrant takes to the appropriate emergency department of the designated health care facility. The Facility Manual must identify the location for designated emergency department.
- SDTA Registrants must go immediately to the emergency department of the designated health care facility for treatment. If required, anti- retroviral drugs to treat an HIV exposure should be given within one to two hours after the exposure.
- Post Exposure Prophylaxis (PEP) kits are available throughout Saskatchewan. Check the ehealth website for kit locations. (Saskatchewan Post-Exposure Prophylaxis (PEP) Kit Sites).
- If possible, source patient's serology test (HBsAg, HCVAb & HIV Ab) should be conducted with patient's consent.

## IPC-02-07 – PROTOCOL FOLLOWING EXPOSURE

Post Exposure Prophylaxis (PEP) regimens will be determined by a qualified health care professional. Every significant exposure must be immediately evaluated to assess the potential to transmit an infectious disease. If the need to administer PEP is determined, it should be done within one to two hours after the exposure.

The assessment of risk to transmit an infectious disease will be based on the following:

- The type and amount of body fluid or tissue involved.
- The nature of the exposure (percutaneous injury, mucous membrane or non-intact skin exposure).
- The known or unknown infection status of the source.
- The susceptibility of the exposed person.

Documentation should include (see IPC-02-08):

- The name of the exposed person, and details regarding the exposed person's vaccination status.

- **The date and time of the exposure.**
- **The nature of the exposure, including the dental procedure being performed, the extent of the exposure, and the immediate action taken.**
- **The name and health status of the source person, including details regarding any infectious diseases known or suspected.**
- **All communication (oral or written) in regard to the injury must be documented.**
- **Copies of all documentation must be retained in the employee's personnel file.**
- **The employer must be advised of the incident and that IPC-02-06 and IPC-02- 07protocol were followed.**
- **The oral health care facility must report the injury to Saskatchewan Workers Compensation Board within 5 days.**

**Further Consideration:**

- **An incident report will be completed within the provincial health authority.**
- **Follow-up counseling and post-exposure management may be required.**

# IPC-02-08 – EXPOSURE DOCUMENT

- IPC OFFICER MUST HAVE COPIES OF THIS FORM ON FILE
- A COPY OF THIS FORM MUST BE TAKEN TO THE HOSPITAL
- A COPY MUST BE RETAINED IN THE EMPLOYEE'S PERSONNEL FILE (NOTE: Confidentiality of this form MUST be ensured)

Name of Exposed Person:

Hepatitis B vaccination completed: date / / Post-vaccination titre: mIU/mL

Date and time of Exposure:

Procedure being performed:

Where and how exposure occurred:
Did exposure involve a sharp device: Yes No
Type and brand of device:
How and when during handling exposure occurred:

Extent of the exposure (describe):

Blood Saliva Other body fluid: Describe:
Percutaneous Injury:
Depth of wound:
Gauge of needle:
Was fluid injected: Yes No
Skin or mucous membrane exposure: Estimated volume of fluid:
Duration of contact:
Condition of skin: Intact Chapped Abraded

Source person information:

Known infectious disease(s):
HIV: Yes No Possible
Anti-retroviral therapy: Yes No Viral load:

- IPC OFFICER MUST HAVE COPIES OF THIS FORM ON FILE
(Follow Up Care Form should be printed on the backside of the Exposure Document)
- A COPY OF THIS FORM MUST BE TAKEN TO THE HOSPITAL
- A COPY MUST BE RETAINED IN THE EMPLOYEE'S PERSONNEL FILE

(NOTE: Confidentiality of this form MUST be ensured)
Follow-up care (describe in detail):

| Date | Caregiver | Action Taken |
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## IPC-02-09 – HAND HYGIENE

Hand hygiene is the most important measure for preventing the transmission of pathogens and is often the weak link in an effective infection prevention and control program. The purpose of hand hygiene is to reduce the quantity and diversity of the transient pathogens found on the surface of the hands, and not intended to remove the resident microorganisms found in the deep skin layers. The spread of these transient pathogens, through non-compliance with hand hygiene protocols, is connected with health-care associated infections and the spread of multi-resistant organisms. Hand washing should be done using plain liquid soap, cool or warm (not hot) water for at least 15 seconds, and single-use towels. Hands should be thoroughly dried after washing, as bacteria can quickly multiply. Hand hygiene using an alcohol hand-rub is an alternative option.

Note:

- Antimicrobial soaps are no longer recommended for routine hand hygiene.
- Alcohol-based hand rub (ABHR) is the preferred method to routinely decontaminate hands in clinical situations when hands are not visibly soiled
- Antimicrobial soaps are recommended for surgical procedures.

Hand Washing

The hands of SDTA Registrants that come in direct contact with patients must be washed:

- At the beginning of the workday with two consecutive 15-second hand washes.
- Whenever hands are visibly soiled.
- Between patients, or when gloves are changed during an appointment.
- Before and after eating.
- After contact with environmental surfaces, instruments or other equipment in the dental operatory.
- After contact with dental materials or equipment.
- After using the washroom or blowing one's nose.
- Whenever the hands have become contaminated with blood, saliva or other body fluid, or whenever the hands have come in contact with some instrument, agent or surface that may have been contaminated with blood, saliva or some other body fluid.

Hand Hygiene Using Alcohol-Based Hand Rubs Providing the hands are not visibly soiled, hand hygiene should be achieved using an alcohol hand-rub by dispensing two full pumps. Sufficient product is required to remain in contact with the hands for a minimum of 15 sec.

Only medical grade (minimum 70% alcohol) commercial products specifically designed as an alcohol hand-rub must be used for hand hygiene. These products must have a Drug Identification number (DIN) or Natural Product Number (NPN) from Health Canada. Hands should be rubbed until dry as the alcohol can cause glove material degradation resulting in loss of glove integrity. Hand hygiene products must be used, stored and dispensed according to the manufacturer's instructions. Liquid products should be stored in closed containers and dispensed from either disposable containers or from containers/pumps that have been washed, disinfected and thoroughly dried between refilling. Liquid products should not be added to a partially empty dispenser or "topped up", due to the risk of bacterial contamination.

Hand care regimen: Emollient hand lotions should be considered for routine use to prevent hand irritation and dermatitis that comes from frequent hand hygiene and glove use. Manufacturers of hand hygiene products should be consulted regarding any possible interaction with hand lotions, soaps and alcohol-based hand rubs. If using latex gloves, petroleum-based lotions should be avoided during the workday, as these may weaken the glove material, resulting in increased glove permeability.

Fingernails are a common area of bacterial contamination. Fingernails should be kept short and trimmed in order to thoroughly clean underneath and prevent glove tears. During the initial hand wash, sterile nail brushes or disposable orangewood sticks may be used to clean cuticles and under fingernails. Nails must not be long or artificial. Freshly applied nail polish on natural nails is acceptable, provided fingernails are kept short. Chipped nail polish must be avoided because as it can harbour microorganisms that are not removed by hand washing.

Jewelry, including rings, arm bands, wrist bands, bracelets, dermal piercings on hands and watches should be avoided. They compromise hand hygiene, make donning gloves difficult, and can increase the chance of tearing gloves. As well, jewelry cannot be adequately decontaminated.

# PERSONAL PROTECTIVE EQUIPMENT

## IPC-03-01 – GENERAL CONSIDERATION

PPE is worn as part of Routine Practices to protect the skin of the hands, arms and face from exposure to splashing or spraying of blood, saliva or other body fluids, and from introducing the surface flora into deeper tissues by traumatic or environmental injury. PPE protects the conjunctival mucosa of the eyes, as well as the lining mucosa of the respiratory tract.

Primary PPE includes gloves, masks, protective eyewear and protective clothing. Wearing gloves, masks, protective eyewear and protective clothing will reduce the risk of exposure to potentially infectious material.

Large particle droplets of water, saliva, blood and other debris are created when using rotary dental handpieces, ultrasonic and sonic scalers, endodontic equipment, and air-water syringes. This visible spray typically travels only a short distance (approximately 60 cm/ 2 feet or less from the patient's mouth) and settles out quickly. The droplets land on nearby surfaces; including the operatory countertops, chair and equipment, the SDTA Registrant and other personnel and the patient. Small particle droplets called aerosols can be inhaled by the SDTA Registrant and other personnel or the patient.

Appropriate work-practice controls will minimize the spread of droplets and aerosols. This includes, but not limited to the use of dental dam whenever possible and high-volume suction.

PPE should be removed prior to leaving the patient-care area. PPE designed to be re-used (protective eyewear and clothing) should be cleaned according to manufacturer's instructions or with soap and water.

## IPC-03-02 – GLOVES

Gloves are worn to protect the skin of the SDTA Registrant's hands from contamination. Gloves do not replace the need for proper hand hygiene (see IPC-02- 09), because gloves may contain small, unapparent holes, can be torn during patient treatment, or hands may become contaminated during glove removal. Furthermore, resident organisms on the hands can multiply rapidly in the warm, moist gloved environment and could be passed to the next patient.

Appropriate hand hygiene must be performed immediately before donning gloves, and immediately after removing gloves. Hands should be allowed to dry completely before putting new gloves on.

The use of latex gloves is not recommended. Gloves are designed as single-use disposable items.

Gloves must be removed, hand hygiene performed, and new gloves applied between patients and whenever the gloves are torn or punctured.

Hands should not remain gloved for longer than 90 minutes.

Gloves should be stored in a cool dry location and never exposed to a heat source.

The type of gloves selected for use depends on the procedure being performed. Types of gloves include:

- Patient Examining Gloves – are used for examinations, procedures involving contact with mucous membranes and skin, as well as laboratory duties and for some minor to moderate surgical procedures. These are latex, nitrile

or nitrile blends, polyurethane orstyrene- based copolymers. If latex gloves are selected powder-free gloves are recommended as the exposure to latex proteins and the chemicals used in the manufacture of all gloves is reduced. Plastic (polyvinyl chloride) or vinyl gloves may also be used however, these materials tend to tear more easily. New patient gloves may be used for operatory cleanup, according to disinfectant product manufacturers instructions.

- Sterile Surgical Gloves – are used for surgical procedures when an open surgical wound is anticipated and/or bone is exposed. These are sterile, hand size specific, and made of latex, nitrile or nitrile blends, polyurethane or styrene- based copolymers.
- Utility, Industrial or General Gloves – are used for cleaning and disinfection procedures, such as instrument processing and operatory cleanup for greater operator protection. These are nitrile or latex-nitrile blends, chloroprene / neoprene blends, butyl rubber, fluoro-elastomer, polyethylene or other vinyl copolymer. These gloves are not for patient care and should be puncture and chemical resistant. Utility gloves should be cleaned after each use. If utility gloves are shared, patient examining gloves must be worn underneath. The integrity of gloves should be monitored after donning and during use, particularly when manipulating metal instruments. If the glove is compromised (manufacturing defect, punctured or torn during use), the glove must be removed immediately, and changed after hand hygiene has been performed. Refer to manufacturer's instructions regarding possible sterilization.

## IPC-03-03 – MASKS

The respiratory mucosa of all SDTA Registrants must be protected by wearing a mask that covers the nose, mouth and chin during all dental procedures.

Mask selection must be applicable to the aerosol environment of the procedure being performed. American Society for Testing of Materials (ASTM International) provides standards for various levels of face masks. Level 1 to level 3 are available; manufacturer's instructions should be followed.

The mask may be changed between patients or more often if it becomes contaminated or wet during the procedure or from the SDTA Registrant's exhaled moist air during a longer procedure. The efficiency of filtration is reduced significantly whenever the outer surface of the mask becomes contaminated with droplets of spray, or by touching the mask with contaminated gloves or hands.

When working in a normal aerosol environment, masks should be changed at least every hour; and when working in a heavy aerosol environment, masks should be changed every 20 minutes. In a non-aerosol/cohort environment, masks may be worn for multiple patients as long as the masks are not touched by contaminated gloves, (or other source of contamination).

The SDTA Registrant must ensure his/her mask is moulded over his/her nose, mouth and chin at all times, so that the SDTA Registrant is breathing though the mask, and air is not bypassing around it. The mask should be either on or off; it should never be worn around the neck or with the nose exposed. Single-use disposable masks must be removed by the earloop or string tie and properly disposed of after use. The SDTA Registrant should avoid touching the mask itself.

To prevent inhalation of small particles that may contain airborne infectious agents such as Mycobacterium tuberculosis, a particulate-filter respirator (N95, N99 or N100) must be worn when respiratory infection precautions are necessary.

These respirators will filter 1- µm particles in the unloaded state with a filter efficiency of greater than 95% (filter leakage.

Note: Expiry dates for respirators must be observed.

## IPC-03-04 – PROTECTIVE EYEWEAR

The conjunctival mucosa of a SDTA Registrant should be protected from contact with potentially contaminated material by wearing protective eyewear during all dental procedures. SDTA Registrants should wear protective eyewear with solid side shields or a face shield during dental procedures that have the possibility of producing tooth

or dental debris, aerosols, splashes, sprays or spatter of blood, saliva or other body fluids.
Prescription eye glasses are not recommended by themselves and should only be worn underneath face shields or other type of eye protection.
Protective eyewear for patients must also be used to protect their eyes from spatter or debris created during dental procedures.
Protective eyewear for the SDTA Registrants and other personnel should be washed, rinsed and dried between patients according to manufacturer's recommendations. If the eyewear becomes visibly contaminated it must be cleaned and disinfected with an intermediate-level disinfectant.
Protective eyewear for the patient must be cleaned and disinfected with an intermediate level disinfectant between patients.

A fixed or portable eye-wash station must be available in the oral health care facility, to aid in managing any chemical or body fluid splashes, sprays or spills into the eyes of a SDTA Registrant or other personnel or patient. Staff should be orientated as to the location, function and indications for use of the eye-wash station. The eyewash station should be cleaned and checked regularly according to manufacturer's instruction to ensure proper water flow. Portable eye-wash devices must be checked for an expiry date on the solution.

## IPC-03-05 – PROTECTIVE CLOTHING

The skin on the arms and chest of an SDTA Registrant should be protected from contact with potentially contaminated material by wearing protective clothing during any dental procedure where splash or spray is anticipated. Long-sleeve protective clothing, extending to the wrists, is ideal for this purpose. Short-sleeve protective clothing is acceptable, as long as there are no breaks in the skin integrity on the arms of the SDTA Registrant. If the arms are not protected, hand hygiene protocols should extend up the arms, past the wrists towards the elbows.
Gowns and lab-coats worn over normal protective clothing become protective clothing and must be treated as such.
The protective clothing must be changed daily or changed as soon as possible if it becomes visibly soiled. Protective clothing should be donned before entering the work area and removed before leaving the work area. Protective clothing must not be worn outside the clinic. Protective clothing should be washed daily in a normal wash cycle, or professionally cleaned. Household bleach is an acceptable form of disinfection for laundering protective clothing.
Oral Health Care Facilities should consider installing laundry equipment onsite or ensure that protective clothing is professionally cleaned to the appropriate level for SDTA Registrants within oral health care settings.
Clinic shoes should be closed toe and should not be worn outside the clinic.
SDTA Registrants must confine hair. Long hair must be tied back so it does not fall to the front of the shoulders. Head wear must be treated as clinical attire

## IPC-03-06 – RESPIRATORY HYGIENE/COUGH ETTIQUETTE

Measures should be implemented at the point of entry to the facility to contain respiratory secretions from patients and accompanying individuals who have signs and symptoms of a respiratory infection. Such measures must continue throughout the visit.

- Staff in all clinical offices should collect simple triaging information on the phone at time of booking.
- Signs should be posted at entrances with instructions to patients with symptoms of respiratory infection. The instructions should tell patients to:
    - Patients should wear a mask if displaying symptoms of respiratory infection.
    - Perform hand hygiene after hands have been in contact with respiratory secretions.
- Tissues and no-touch receptacles for disposal of tissues should be provided.
- Resources for performing hand hygiene should be provided in or near waiting areas.
- Masks should be offered to coughing patients and other symptomatic persons when they enter the dental setting.
- Space should be provided and persons with symptoms of respiratory infections should be encouraged to sit at least two meters away from other patients. If available, facilities may wish to place these patients in a separate

area while waiting for care.

SDTA Registrants should be educated/trained on the importance of infection prevention measures to contain respiratory secretions and to prevent the spread of respiratory pathogens when examining and caring for patients with signs and symptoms of a respiratory infection.

# STERLIZATION AND DISINFECTION OF PATIENT CARE ITEMS

## IPC-04-01 – GENERAL CONSIDERATIONS

Reusable patient-care items, such as dental instruments, handpieces, devices and equipment, can be categorized as critical, semi-critical, or non-critical, depending on the potential risk for infection associated with their intended use. This categorization is based on a modified Spaulding classification (see Appendix).

- Critical Items are used to penetrate soft tissue or bone. Critical patient care items have the greatest risk of transmitting infection and must be sterilized by heat. Examples of these items include, but are not limited to scalers, reusable burs, and all surgical instruments. See IPC-04-02 for further information.
- Semi-Critical Items are those items that only touch mucous membranes or non-intact skin and have a lower risk of transmission. As the majority of semi-critical patient care items in dentistry are heat-tolerant, all heat-tolerant semi-critical items must be sterilized. If a semi-critical item is heat-sensitive, then single use items must be used. High-level disinfectants must not be used as a sterilization method for heat sensitive items. Examples of such items are mouth mirrors and reusable impression trays. SeeIPC-04-03 for further information.

  Non-Critical Items contact only intact skin, which serves as an effective barrier to microorganisms. Non-critical patient care items pose the least risk of transmission of infection. In the majority of cases, cleaning, or if contaminated by blood, saliva or other body fluid, cleaning followed by disinfection with an intermediate-level disinfectant is sufficient. Cleaning or disinfection of some non-critical items may be difficult or may damage the surfaces. In those instances, the use of disposable barriers to protect these surfaces may be a preferred alternative. Examples of these items are bib chains, radiograph cones and blood pressure cuff. See IPC-04-05 for further information.

All newly purchased critical and semi-critical instruments/items that are received non-sterile must be inspected and sterilized prior to first use, in accordance with the manufacturer's instructions (e.g., burs, matrix bands, stainless steel crowns).
Note: Intermediate-level disinfectant means a hospital grade liquid chemical with a Drug Identification Number (DIN) from Health Canada with a claim of potency as a tuberculocidal disinfectant.

## IPC-04-02 – PROCESSING CRITICAL ITEMS

Critical patient care items include instruments that penetrate soft tissue, contact bone, enter into or contact the bloodstream or other sterile or non-sterile body tissue. Examples of critical items include surgical instruments, periodontal scalers, dental burs, dental dam clamps, endodontic files and dental implant drills. (see Appendix)
Note: If a single-use item is available it should be used whenever possible.
Critical items must be sterilized by heat to prevent cross- contamination and the spread of infection in the dental setting. SOHCP and other personnel can be exposed to pathogens on contaminated critical instruments and devices through percutaneous injury, contact with non- intact skin on the hands or other body parts, or contact with mucous membranes of the eyes, nose or mouth.
Sterilization is a complex process requiring specialized equipment, adequate space, qualified personnel who are provided with ongoing training and regular monitoring for quality assurance. Instrument Processing requires multiple steps to achieve sterilization. These steps include: disassembly and sorting, cleaning, rinsing, drying, inspection, corrosion reduction, packaging, sterilization, cooling, drying, storage and delivery. These steps must be followed to ensure that all

instruments are adequately processed and safe for re-use on patients. The goal of sterilization is to break the chain of infection and eliminate the potential for patient-to-patient transmission.
Work-practice controls must be used when processing critical items. SOHCP and other personnel should wear masks, glasses and utility gloves as aerosols may be released when hand scrubbing. PPE must be worn during instrument decontamination to avoid exposure from splashing.
Operatory Clean-up: Contaminated instruments must be handled carefully to prevent exposure to sharp instruments that can cause a percutaneous injury. Disposable sharps such as needles and blades must be discarded in an appropriate container at the point of use or located as close as feasible to where the items were used. Instruments that have been used on a patient should be handled with puncture-resistant utility gloves during operatory cleanup (see Gloves, IPC-03-02).
Transportation: Instruments should be placed in a cassette or puncture-resistant container at the point of use to prevent percutaneous injuries during transport to the instrument processing area.
Instrument Processing Area: A designated instrument processing area or a separate room must be constructed in the oral health care facility. This central processing area should be one directional and have clear sections for:

- Receiving, cleaning, and decontamination
- Preparation and packaging
- Sterilization
- Storage of sterilized instruments

Walls or partitions should separate the sections to control traffic flow and contain contaminants generated during processing. If physical separation of these sections is not possible, adequate spatial separation is necessary, provided the SDTA Registrants or other personnel processing the instruments are trained in work practices to prevent contamination of clean areas. Space should be adequate for the volume of work anticipated and the items to be stored.

Cleaning: Instruments must be cleaned immediately after use. If cleaning is not possible then the use of an enzymatic product is recommended. All instruments must be cleaned within 24hours of usage. The surface of an instrument cannot be sterilized if there is blood, saliva and other debris adhering to the surface. Cleaning involves using a cleaning agent with water to remove debris, organic and inorganic contamination by an automated process or hand scrubbing. The method of cleaning will depend on the debris/materials present on the instrument so the processes may overlap.

Methods include:

- An automated washer: The use of an automated instrument washer is recommended as the best option for cleaning instruments. All washers must be specifically designed for washing medical instruments.
- Ultrasonic cleaner: The use of an ultrasonic cleaner with strainer-type baskets and removal forceps is an alternative. Instruments are post- rinsed to remove chemical residue, taking care to minimize splashing. Solutions must be changed daily or sooner if there is visible bioburden.
- Hand scrubbing: When hand scrubbing, utility gloves should be used along with running water to help contain aerosols. When personnel are using a long-handled brush, instruments should be held in a downward direction and brushed away from the user. A hand full of instruments must not be cleaned at one time.

Use of Rust Inhibitors: If rust inhibitors are applied to items, follow the manufacturer's instruction.
Holding Solution: Instruments are placed in a puncture- resistant container and immersed in a holding solution containing detergent or sprayed with an enzymatic cleaner to prevent drying of debris.
Instrument Preparation and Packaging for Sterilization: At this point, these instruments are still contaminated. SDTA Registrants or other personnel should make every effort to rinse away or remove biological debris, disinfecting solutions, chloride solutions and highly alkaline detergents before heat- processing instruments. These substances can cause pitting or staining of metal surfaces. Manufacturer's instructions should be consulted to correctly process possible non-compatible metals. (For example: titanium and carbon steel scalers). Packaging together items of widely dissimilar metals should be avoided because of the potential for electrolytic damage to instrument surfaces.
All instruments must be dry prior to processing. Cleaned instruments should be inspected and placed into cassettes,

wrapped, or packaged for sterilization. Packaging and wrapping materials designed for sterilization must be used according to manufacturer's instructions. An external and separate internal chemical indicator must be used with every instrument package. SDTA Registrants and other personnel should refer to the manufacturer's instructions regarding use and correct placement of chemical indicators.

Loading the Sterilizer Chamber:
Each sterilizer load must include a Class 5 Chemical Integrating Indicator in a process challenge device (PCD). The load must not be released for use until the class 5 Chemical Integrating Indicator has been verified or each sterilization package must contain a Class 5 Chemical Integrating Indicator See IPC-04-04.
A PCD is a test used to access the performance of the sterilization process and the results must be verified and recorded at the end of the sterilization cycle. A PCD may be commercially manufactured or created in house by selecting one instrument package for the load that is the most challenging to sterilize and placing a type 5 chemical indicator and/or a BI at the center of this package. Factors that make an instrument package difficult to sterilize include those with large metal masses and sets with mixed materials. To identify this package, label it "PCD" and place it in the most challenging area to sterilize.

- Items must be placed in the sterilizer according to manufacturer's instructions.
- The chamber should not be overloaded; adequate space must be allowed between items.
- Bagged items should be placed on trays with the paper side facing up.
- The trays should not be overloaded; items should be spread in a single layer with instruments not touching the seams of the bags.
- Hinged instruments should be sterilized in the open and unlocked position (eg. forceps).
- Packages and cassettes must be fully dried prior to placement in the sterilizer.
- The sterilization of sharpening stones/cards must follow manufacturer's instructions.

Sterilization:
Heat-tolerant dental instruments are sterilized in an oral health care facility using:

- Steam under pressure (autoclaving)
- Dry heat

For steam sterilization, both pre-vacuum (Class B) and pulsed-pressure, tabletop sterilizers are acceptable; however pre-vacuumed steam sterilizers are preferred for sterilizing dental instruments.
The use of chemical vapour IS NOT an acceptable method of sterilization.

All sterilization must be performed using medical sterilization equipment specifically designed for the sterilization of instruments. Sterilization times, temperatures and other operating parameters must be used as recommended by the specific manufacturer of the equipment used. Instructions regarding the correct use of containers, wraps, placement and type of chemical or biological indicators must be followed as recommended by the specific manufacturer of the equipment used.
Items must be arranged in the sterilizer in such a way as to permit free circulation of the sterilizing agent (steam, dry heat). The manufacturer's instructions for loading the sterilizer regarding capacity and arrangements of the instruments or packs within the sterilizer chamber must be followed. Instrument packs must be allowed to dry inside the sterilization chamber before opening, removing and handling, to avoid wicking of moisture and, potentially, microorganisms from hands or gloves. It is required that the date, time and sterilizer used be stamped on the product wrapping. If using a marker for labelling, use one made for this specific purpose. Write on the clear plastic surface of a bag or pouch and not the paper, to avoid compromising the package.
The sterilizer manufacturer should be consulted regarding selection and use of chemical and biological indicators (see IPC-04-04).
"Liquid chemical disinfectants" must not be used to sterilize critical instruments in dentistry, because their effectiveness cannot be verified with biological monitors. Instrument cassettes or trays containing sterilized instruments must remain

in sterilization packaging to maintain sterility during storage. Packaging materials must be specifically designed for the type of sterilization process utilized by the facility.

Flash Sterilization: Is a process in which items are sterilized unwrapped in porous trays. The time to sterilize ranges from 3-10 minutes according to the manufacturer's recommendations. This process presents a compromise due to the fact that the sterility of the unwrapped instruments is defeated upon removal from the sterilizer. Instruments processed by flash sterilization must be used immediately upon removal from the sterilizer. This process must be limited to emergency sterilization only.

Sharpening of Instruments: Sharpening of contaminated instruments presents a risk for disease transmission through accidental exposures. Sterilized instruments that require sharpening must be sharpened at point of care to maintain sterility. If they are not used immediately, they must be reprocessed in the automated washer, sterilized and stored for future use.

Storage: All critical instruments (including cutting burs) must be stored in a sterile state in closed storage until the point of use. The use of a bur block for the storage of cutting burs is no longer acceptable unless the bur block is cleaned, packaged and sterilized after each patient.

## IPC-04-03 – PROCESSING SEMI-CRITICAL ITEMS

Semi-critical items are items that touch mucous membranes or non-intact skin and have a lower risk of transmission.

As the majority of semi-critical patient care items in dentistry are heat-tolerant; all heat-tolerant semi-critical items must be sterilized. Refer to IPC-04-02.

"Liquid chemical disinfectants" must not be used to sterilize semi-critical instruments in dentistry. Their effectiveness cannot be verified with biological monitors. If a semi-critical item is heat-sensitive, single use items must be used. (see Appendix).

## IPC-04-04 – MONITORING STERLIZATION

The condition of sterility is ensured by thorough monitoring of sterilization procedures and equipment, utilizing mechanical, chemical and biological monitors. Quality assurance for re-usable instruments: All sterilized packages, cassettes and instruments should be inspected prior to client use.

Inspect for:

- package integrity (no rips, tears or holes)
- packaging must be dry
- presence of package label
- external process indicator that has changed colour
- internal process indicator that has changed colour
- an intact seal
- instruments that are free of debris or potential contamination

If instrument, package or cassette fails inspection, do not use for client care. The contents must be cleaned, repackaged and sterilized again.

Mechanical techniques: Monitoring sterilization includes assessing cycle time, temperature, and pressure by observing the gauges or displays on the sterilizer and noting these parameters at the end of each load. Correct readings do not ensure sterilization; however, incorrect readings may be an early indication of a problem with the sterilization cycle. New sterilizers have printouts or USB data devices for documentation recording.

Chemical indicators: Chemical indicators (classes 1 to 4) assess one or more of the physical variables of time, temperature and pressure during the sterilization process. Internal and external chemical indicators (chemical indicator tape or special markings) change colour rapidly when a specific variable is reached. This verifies that the package has been exposed to the sterilization process but does not ensure sterilization. Chemical indicators must be used inside and outside of each package (indicators are incorporated in sterilization pouches) to signify that the package has undergone the sterilization

cycle.
If either an internal or external chemical indicator indicates inadequate processing, items in the load must not be used until they have been reprocessed.
Chemical Integrating Indicators: Class 5 indicators are known as chemical integrating indicators and are designed to react to all critical variables. Class 5 chemical integrating indicators are for use with each sterilization cycle, because they are considered to be the most accurate chemical indicator; however, they do not ensure sterilization.
Biological Monitoring: Spore tests verify the sterilization process directly by assessing the killing of known highly resistant microorganisms. The spores used in biological indicators (BI)are the most resistant and present in greater numbers than the common microbial contaminants found on patient-care instruments. A negative spore test signifies that other potential pathogens in the load have been killed, thus confirming sterilization. The date, sterilizer and cycle number must be documented and then signed by a SDTA Registrant or other personnel. A control biological indicator must be run each day to confirm that the incubator is functioning correctly.

Air Removal Test (Bowie-Dick): Sufficient air removal is necessary for steam penetration and contact with device surface. An air removal/steam penetration test with a type 2 chemical indicator (Bowie-Dick)) is used specifically for testing dynamic air removal sterilizers (pre-vacuum). For dynamic air removal-type sterilizers (pre-vacuum cycles), an air removal test shall be performed at the beginning of each day that the sterilizer is used. An air removal test must be placed in the chamber of an empty sterilizer as per the manufacturer's instructions for use, which is typically on the bottom shelf above the drain. The control biological indicator should yield positive results for bacterial growth. The date and time for the control biological indicator must also be recorded and then signed by a SDTA Registrant or other personnel.
Manufacturer's directions determine the placement and location of the biological indicator in the sterilizer.
Monitoring Processes: Each day oral health care facilities must document and retain records from in-house biological monitoring. These records must indicate the sterilizer, date, time and signature of staff member completing the process.

- Each sterilization cycle must contain one class 5 chemical integrating indicator which has been inserted in a Process Challenge Device (PCD). The sterilization cycle must not be released until the class 5 chemical integrating indicator has been verified or each package must contain a class 5 chemical integrating indicator.
- An in-office biological indicator test must be completed every day for each sterilizer in a PCD. In addition to this, one control biological indicator must be incubated each day to confirm that the incubator is functioning.
- A weekly biological indicator test provided by a mail-in system available through the College of Dentistry, University of Saskatchewan or other external testing service must be completed for each sterilizer.

Biological monitoring must also be completed:

- When introducing a new sterilizer
- Following sterilizer repairs
- When introducing new packaging material
- Every load containing implantable devices and/or the instruments used to place implantable devices (including but not limited to dental implant instrument, bone grafting or ridge preservation instrument including instrument used to place pins, screws and plates) must be biologically monitored with a spore- test. These items must be quarantined until the test results are known

  In the event of a positive in-house or external service spore test, the oral health care facility must be able to identify all sterilization packages since the last confirmed negative test and then reprocess all of these packages prior to use. A biological indicator test MUST be repeated immediately after correctly loading the sterilizer and using the same cycle that produced the failure. All records of chemical and mechanical monitoring since the last negative biological indicator test must be reviewed. In the event of a positive in-house and non-U of S biological monitoring service all SDTA Registrants members must report this to the SDTA. The stamping of sterilization packages with the date, time and sterilizer used will allow this identification process to be more efficient.

The sterilizer operating procedures must be IMMEDIATELY reviewed, including packaging, loading and spore testing, with all SDTA Registrants or other personnel who work with the sterilizer to determine whether operator error could be

responsible. Common reasons for a positive spore test in the absence of mechanical failure of the sterilizer include:

- Improper packaging
- Improper loading
- Improper timing
- Improper temperature
- Improper method of sterilization in regard to the item

The sterilizer must be IMMEDIATELY removed from service. A second monitored sterilizer in the oral health care facility must be used. A pre-tested sterilizer from a sales or repair company may be obtained to minimize facility disruption while waiting for the repeat biological indicator results on the sterilizer with the positive spore test. All sterilized packages from that sterilizer must be reprocessed as a precaution. If the repeat biological indicator is negative and chemical and mechanical monitoring indicates adequate processing, the sterilizer may be put back into service.
If the repeat biological indicator is positive, and packaging, loading, and operating procedures have been confirmed as being performed correctly, the sterilizer must remain out of service until it has been inspected, repaired, and re-challenged with a biological indicator in three consecutive empty chamber sterilization cycles. Whenever possible, items from suspect loads dating back to the last negative biological indicator should be recalled, re-wrapped and re-sterilized.

## IPC-04-05 – PROCESSING NON-CRITICAL ITEMS

Non-critical patient-care items pose the least risk of transmission of infection, because they contact only intact skin, which serves as an effective barrier to microorganisms. Examples of non-critical items include radiograph heads/cones, blood pressure cuffs, dental dam punch and pulse oximeters.
Non-critical patient care items should be cleaned, or, if contaminated, cleaned and then disinfected with an intermediate-level disinfectant. Cleaning and disinfection of some non-critical items may be difficult or may damage the surfaces. In those instances, the use of disposable surface barriers may be a preferred alternative (see Appendix).

# ENVIRONMENTAL INFECTION AND PREVENTION CONTROL

## IPC-05-01 – GENERAL CONSIDERATIONS

Environmental surfaces in the dental operatory that do not contact the patient directly are not a direct risk to patient safety. These surfaces can become contaminated during patient care, and then act as a reservoir for microbial contamination. Transmission of this type occurs primarily through SDTA Registrant or other personnel hand contact, or by touching the environmental surface with a contaminated instrument. Pathogens can be transferred to instruments, hands, nose, mouth or eyes.

Proper hand hygiene and the wearing of PPE is an essential part in minimizing such potential transferal. Surface protection using either surface barriers or cleaning and disinfection, also protects against microbial transfer from environmental surfaces.
Environmental surfaces can be divided into:

- Clinical Contact Surfaces: These surfaces may come in direct contact with a SDTA Registrant's or other personnel's hands, patient-care items, or with a patient, and have a minimal, but potential risk of infectious disease transmission. Examples would include operative surfaces, light handles, dental radiograph equipment, drawer handles and doorknobs.
- Housekeeping Surfaces: These surfaces have limited risk of disease transmission, unless they inadvertently come in direct contact with a SDTA Registrant's or other personnel's hands, patient- care items or dental appliances. Examples would include floors, walls and sinks.

An important first step in disinfecting any surface is cleaning. Cleaning removes debris such as organic matter that

interferes with the microbial inactivation by a disinfectant. When using disinfectants, manufacturer's directions must be precisely followed. Strict attention must be given to proper use of the product with regard to method of application and duration of application. Disinfection does not occur if the surface does not stay wet for the prescribed length of time.

## IPC-05-02 – CLINICAL CONTACT SURFACE

Clinical contact surfaces can be directly contaminated with blood, saliva, bodily fluids or water containing bodily fluids by direct spray, spatter, contact with contaminated instruments, or a SDTA Registrant's or other personnel's gloved hands. These surfaces can contaminate other instruments, devices, hands or gloves. Surfaces can be contaminated by aerosols. (see Appendix)

- Light handles
- Switches
- Radiograph equipment
- Chairside computer keyboards and monitors
- Reusable containers of dental materials
- Drawer handles
- Faucet handles
- Countertops
- Pens and other writing utensils
- Telephones
- Doorknobs

Clinical contact surfaces must be protected to avoid cross-contamination. Surface protection is accomplished by either:

- Cleaning and disinfecting with an intermediate- level disinfectant, or
- Using surface barriers

Surface cleaning and disinfection

All clinical contact surfaces that have been contaminated or may have been contaminated must be cleaned and disinfected between patients and at the end of the workday using an intermediate-level disinfectant. SDTA Registrants or other personnel must wear appropriate PPE while cleaning and disinfecting clinical contact surfaces.

Disinfection may be accomplished by the wipe-discard- wipe method. The disinfecting step must keep the surface wet for the prescribed length of time according to the manufacturers' instructions.

Applications of cleaning chemicals by aerosol or trigger spray bottles may cause eye injuries or induce or compound respiratory problems or illness. In accordance with best practices, apply cleaning chemicals to a wipe before using.

To make daily cleaning easier treatment areas must be kept clear of unnecessary equipment and supplies. Manufacturers' instructions should be consulted regarding compatibility of devices and equipment with liquid chemical disinfectants.

Surface barrier protection

Clinical contact surfaces and equipment can be protected from contamination using surface barrier protection, particularly if they are difficult to pre-clean prior to disinfection. If surface barriers are used, SDTA Registrants or other personnel should ensure that they are appropriately secured. Surface barrier protection is particularly effective for those clinical contact surfaces that are difficult to clean and disinfect due to surface topography or material chemical incompatibilities.

Surface barrier protection materials include:

- Clear plastic wrap
- Plastic bags
- Plastic sheets
- Plastic tubing

- Plastic-backed paper
- Plastic computer keyboard covers
- Other materials such as 'self-adhesive barriers' that are impervious to moisture.

Surface barriers become contaminated during patient care. While gloved, surface barriers should be carefully removed and discarded between patients. Following removal of the surface barrier, the clinical contact surface should be examined to ensure it did not become inadvertently contaminated. If contaminated, the surface must be cleaned and disinfected with an intermediate-level disinfectant.
Following removal of the surface barrier, gloves must be removed, and hand hygiene performed. Clean surface barriers should be placed prior to the next patient treatment.

## IPC-05-03 – HOUSEKEEPING SURFACES

Although housekeeping surfaces, such as floors, walls and sinks, have a limited risk of disease transmission in dental health care settings, frequent cleaning with diluted detergents or household low-level disinfectants is required. If the surface becomes contaminated with blood, saliva or other bodily fluids, the surface must be cleaned and then disinfected with an intermediate-level disinfectant. Blood spills or splashes, saliva or other bodily fluids must be contained and managed as quickly as possible to reduce the risk of contact by patients and SDTA Registrants and other personnel. The SDTA Registrants and other personnel should wear appropriate PPE. Visible organic material should be removed with absorbent material (disposable paper towels discarded in a leak-proof container). Non-porous surfaces should be cleaned and then disinfected with an intermediate-level disinfectant. If such products are unavailable, a 1:10 dilution of sodium hypochlorite (1 part 5.25% household chlorine bleach to 9 parts water) is an inexpensive and effective disinfecting agent.
Floors should be clean, and spills must be quickly cleaned up. Routine disinfection of floors, windows, walls, drapes, window blinds and other vertical surfaces is not necessary unless the surfaces are known or are suspected to be contaminated.
Cleaning tools, such as mop heads or cleaning cloths, should be cleaned after use and allowed to dry before reuse. Single-use, disposable mop heads and cloths are available and should be used to avoid spreading contamination.
Diluted solutions of detergents or disinfectants, if prepared in dirty containers, stored for long periods of time or prepared incorrectly, may become reservoirs for microorganisms. Manufacturers' instructions for preparation and use should be followed. Fresh cleaning solution should be made each day, discarding any remaining solution and allowing the container to dry between uses.
Carpeting and cloth furnishings are difficult to clean and cannot be reliably disinfected. Carpeting and cloth furnishings must not be used in patient care areas.
Mechanical rooms should also be kept extremely clean and outside air supply systems should be considered.

## IPC-05-04 – WASTE MANAGEMENT

General waste from oral health care settings is no more infective than residential waste. The oral health care facility is responsible for the waste until it is safely removed from the premises.
Medical waste of concern requires special storage, handling, neutralization and disposal, according to provincial and municipal regulations. Such waste includes:

- Solid waste soaked or saturated with blood or saliva (gauze so saturated with blood following surgery that it is freely dripping blood or could easily release liquid blood if compressed)
- Surgically removed hard or soft tissue (not including extracted teeth; see IPC-06-08)
- Contaminated sharp items (needles, scalpel blades, burs, wires)

Any item that may have come in contact with blood, saliva, other bodily fluids or water or other liquid that contains bodily fluids is not likely to be infective and treating all such waste as infective is neither practical nor necessary.
Non-sharp medical waste should be placed in a sturdy, leak-resistant bag. Local regulations may require that this bag is labelled as "bio-hazardous" waste. The exterior of the bag should not be contaminated prior to disposal. If the exterior of the bag is contaminated or punctured, the bag should be placed in a second sturdy bag, similarly labeled. All bags should be securely closed for transportation and disposal.

Sharp medical waste must be placed in biohazard puncture resistant containers, located at the point of use or located as close as feasible to where the items were used.
Oral health care facilities should dispose of general and medical waste daily to avoid accumulation. Every oral health care facility should have a plan for management of medical waste that complies with local provincial and municipal regulations to ensure health and environmental safety.
All containers with blood or saliva (suctioned fluids) may be safely poured into a utility sink, drain or toilet, which drains into a sanitary sewer system or septic tank. SDTA Registrants and other personnel should wear appropriate PPE during this task.

## IPC-05-05 – DENTAL UNIT WATERLINES

Dental unit waterlines (DUW) (narrow-bore plastic tubing that carries water to handpieces, air/water syringe and ultrasonic scaler) can become heavily colonized with waterborne microorganisms, including bacteria, fungi, and protozoa; which form a biofilm on the interior surface of the waterline. However, DUW are not a supportive environment for bacteria commonly found in the oral cavity.
High numbers of these opportunistic microorganisms are not necessarily dangerous to the general population, unless the SDTA Registrant, other personnel, or patient is a susceptible host. Susceptible hosts would include individuals that are immunocompromised, or have cystic fibrosis, chronic bronchitis or bronchiectasis.
Sterile water or sterile saline must be used when irrigating open vascular sites and whenever bone is cut during invasive surgical procedures. Conventional dental units do not reliably deliver sterile solutions, even when equipped with independent water reservoirs, due to the formation of biofilm along the water pathway. Delivery systems, such as bulb syringe or sterile, single-use disposable products can be used to deliver sterile irrigation solutions.
The potential risk of infection from DUW microorganisms can be effectively reduced to counts of potable water standards (less than 500 cfu/ml) by following regular waterline maintenance procedures. These procedures are as follows:

All Water Systems

- Waterline heaters must not be used in a dental unit or in dental equipment, as these heaters encourage waterline microorganism growth.
- Purge all water lines dry when the units will not be used over an extended period of time to prevent biofilms forming in stagnant water. Refer to manufacturer's instructions relative to your specific system.
- Aftertreatment, handpieces and air/water syringes must be run for 20 seconds in order to flush all potentially contaminated air and water.
- Mandatory annual dental waterlines testing is available through the Saskatchewan Disease Control Laboratory or University of Saskatchewan College of Dentistry Sterilizer & Water Monitoring program.

Municipal Water System

- Must be flushed at the beginning of each workday by running the lines for 2 minutes. This flushing should be done with handpieces, air/water syringe tips and ultrasonic tips not attached to the waterlines.

Closed Water System

- Must have clean hands/gloves when changing the water bottle ensuring to not touch the tubing, as contaminated
- hands/gloves can easily contaminate the entire system.
- A variety of products are available that effectively maintain clean dental unit waterlines in closed water systems. Manufacturer's instructions must be followed.

## IPC-05-06 – BOIL WATER ADVISORIES

Boil water advisories occur whenever public health officials determine that municipally delivered tap water is unsafe to drink. Circumstances that compromise the safety of the municipal water system include compromises in the distribution system (water-main breaks), water treatment system failures and natural disasters (floods, hurricanes or earthquakes). During a boil water advisory, the following precautions must be taken:

- Public water must not be delivered to the patient through the dental unit, ultrasonic scaler or other devices or equipment.
- Alternative water sources that are delivered through closed delivery systems can be used. Use water from an alternative approved source.
- If necessary, treatment delivery should be postponed.
- Patients must not rinse their mouths with tap water; bottled or distilled water should be used instead.
- Tap water must not be used for hand hygiene. Antimicrobial products that do not require water, such as alcohol-based hand-rubs, should be used for hand hygiene. If the hands have been known or suspected to be contaminated, hands should be washed using bottled or distilled water and an antimicrobial soap.
- When the boil water advisory is cancelled, follow guidance provided by the local water utility regarding adequate flushing of all incoming public water system lines, including any taps or other waterlines in the oral health care facility. If no guidance is provided, flush all waterlines for 1-5 minutes prior to using for patient care. The dental unit waterlines in all dental units and equipment must be disinfected (shock system) according to the
- manufacturer's instructions prior to use.

# SPECIFIC APPLICATIONS

## IPC-06-01 – DENTAL HANDPIECES AND OTHER DEVICES

Several dental devices contact mucous membranes and expel air and water into the patient's mouth and potentially into open wounds. These devices are attached to the air or waterlines of the dental unit, and include, but not limited to:

- High and low-speed handpieces
- Surgical handpieces and motors
- Prophylaxis angles and nosecones
- Ultrasonic inserts and sonic scaling tips and handpieces
- Ultrasonic and sonic endodontic handpieces
- Air abrasion devices
- Air/water syringe tips

These devices have the potential of retracting oral fluids into internal compartments of the device. This retained patient material can then subsequently be expelled in the oral cavity of a patient during later use. Restricted physical access often limits the cleaning of these internal compartments, and compromises decontamination.

Any dental device connected to the dental air/water system that enters the patient's mouth must be run to discharge water and air for a minimum of 20 seconds after each patient use. This procedure is intended to physically flush out any patient material that might have entered the turbine and air and waterlines.

According to the Centers for Disease Control and Prevention all dental pieces and other itraoral devices that can be removed from the air and water lines of dental units are considered semi-critical devices and must be cleaned and sterilized between patient.

Manufacturers' instructions for cleaning, lubrication and sterilization should be followed closely to ensure both the

effectiveness of the process and the longevity of handpieces.
Components of dental devices and equipment that are permanently attached to dental unit waterlines should be treated as clinical contact surfaces (see IPC-05-02).
Such components (electric handpiece motors, handles for ultrasonic devices or dental unit attachments for saliva ejectors, high-volume evacuators, and air/water syringes) should be cleaned and disinfected with an intermediate-level disinfectant prior to use on the next patient or covered with surface barriers that are changed after each use (see IPC-05-02).

## IPC-06-02 – SUCTION LINES

Backflow in low-volume suction lines can occur when a seal around the saliva ejector is created (by patient closing their lips around the tip of the ejector, creating a partial vacuum). Such backflow can result in microorganisms from the suction lines to be retracted from or into the patient's mouth and a potential source of cross-contamination.
SDTA Registrants and other personnel should not allow patients to seal their mouths over the saliva ejector tip; or, specifically designed saliva ejector tips that do not allow a negative pressure to form around the tip of the saliva ejector should be used.
Suction lines must at minimum be rinsed with water between patients to remove loosely adherent debris and microorganisms and to reduce the likelihood of infectious material backflow. The air/water syringe may be used for this purpose to produce turbulent flow in the line and accomplish the required 20 second flush of the air/water syringe. High volume and low volume suction lines should be cleaned with an enzymatic cleaner daily and following all surgical procedures.
Dental unit suction traps must be inspected frequently as dictated by usage and replaced as necessary. Amalgam waste must be deposited in amalgam waste recycling.

## IPC-06-03 – DENTAL RADIOLOGY

Cross-contamination of radiographic equipment and environmental surfaces with blood or saliva is possible. SDTA Registrants in each oral health care facility should develop their own protocol relative to their equipment. Gloves and other PPE must be worn when taking radiographs and handling contaminated PSP (phosphor storage plates) or sensors/film packets. Heat-tolerant versions of intraoral radiograph accessories are available and these semi-critical items (film-holding and positioning devices) must be heat sterilized between patient uses.
Radiography equipment (radiograph tube head and control panel) that have come into contact with gloved hands or contaminated PSP or sensors/film packets must be cleaned and disinfected after each patient use or must be protected with surface barriers that are changed after each patient use.
After exposure of the radiograph and before glove removal, the film packet must be disinfected using an intermediate-level disinfectant. Alternately, the contaminated film packets may be opened using gloved hands, the film dropped onto a clean surface without touching and the empty packets disposed in an area where cross-contamination is not possible. The gloves should then be removed, and the film processed.
Film barrier pouches may alternately be used. The film packets should be carefully removed from the pouch to avoid contamination of the inner film packet.

After exposure of the PSP and before glove removal, open PSP barrier carefully to avoid contamination and drop PSP onto clean surface. The gloves should then be removed, and the PSP scanned according to manufacturers' instructions.
Care must be taken to avoid contamination of the developing equipment. Surface barriers could be used. Any surfaces that become contaminated must be cleaned and disinfected using an intermediate-level disinfectant.
Digital Radiography: PSP, sensors and other associated instruments (intraoral camera, electronic periodontal probe, occlusal analyzers and lasers) must be covered with a surface barrier prior to patient use. The device should be carefully inspected following removal of the surface barrier, and if contaminated, must be cleaned and disinfected prior to next patient use. Manufacturers' instructions regarding disinfection should be carefully followed.

## IPC-06-04 – SINGLE USE OR DISPOSABLE DEVICES

A single-use (disposable) device is designed to be used on one patient and then discarded, not re-processed for use on another patient. Examples of single-use or disposable devices include syringe needles, single-use burs, single-use endo files, prophylaxis cups and brushes and orthodontic brackets.
Implantable devices must be considered single use and not reused in other patients.
Single-use devices in dentistry are usually not heat- tolerant and cannot be sterilized. Certain items (prophylaxis angles, saliva ejector tips, high-volume evacuator tips and air/water syringe tips) are commonly available in a disposable form and must be disposed of appropriately after use.

## IPC-06-05 – PRE-PROCEDURAL MOUTH RINSES

Antimicrobial mouth rinses (chlorhexidine gluconate, essential oils or povidone-iodine) may be used by a patient prior to all non-surgical dental procedures. Such rinses are carried out to reduce the number of microorganisms that might be released from the patient's mouth in the form of aerosols or spatter, and which can subsequently contaminate SDTA Registrants and other personnel.
Pre-procedural mouth rinses should be used for all surgical procedures to decrease the number of microorganisms introduced in the patient's bloodstream during invasive dental procedures.
This procedure may not be practical for those patients that cannot rinse or spit, and considerations may be given where the antimicrobial solution is brushed or swabbed in the mouth prior to beginning oral health care treatment.
Note: Ensure that non-alcohol containing products are used if alcohol is contra-indicated for that patient.

## IPC-06-06 – HANDLING OF REMOVABLE PROSTHESIS

Any prosthesis coming from the oral cavity is a potential source of infection.

- The SDTA Registrant or other personnel must wear PPE.
- A surface barrier protection should be used on the ultrasonic lid knob and control timer dial and glove removed prior to adjusting.
- When a prosthesis is soiled with food debris, the most efficient and safest procedure for cleaning is to scrub using the patient's denture brush.
- The prostheses should be placed into a sealable bag containing a denture cleaning agent and then the bag placed into an ultrasonic cleaner according to product instructions.
- Once removed from the ultrasonic cleaner, the prostheses should be thoroughly rinsed and scrubbed under running water.
- Return the prosthesis and denture brush to the patient in a clean sealable bag containing a mouth rinse.

## IPC-06-07 – HANDLING OF BIOPSY SPECIMENS

Biopsy specimens must be placed in a sturdy, leak-proof container with a secure lid for transportation. The SDTA Registrant should take care when collecting the specimen to avoid contaminating the outside of the container. If the outside of the container becomes or is suspected to be contaminated, it should be cleaned and disinfected and placed in an impervious bag prior to transportation.
Provincial and municipal regulations must be followed when storing, transporting and shipping a biopsy specimen.

## IPC-06-08 – HANDLING OF EXTRACTED TEETH

Extracted teeth may be returned to the patient following cleaning of visible blood and debris. If being discarded, extracted teeth without amalgam fillings may be disposed as general office waste. General office waste is no more infective than residential waste and should be treated in the same format. Extracted teeth containing dental amalgam should be placed in an amalgam waste container, as they cannot be incinerated with general or biomedical waste.

Extracted teeth to be used for educational purposes must be cleaned of visible blood and debris and immersed in a 10% formalin solution for at least 2 weeks. Provincial and municipal regulations for shipping biohazard materials must be followed.
If being sent to a dental laboratory for shade or size comparisons, extracted teeth must be cleaned, disinfected with an appropriate intermediate-level disinfectant and transported in a sealed container.

## IPC-06-09 – DENTAL LABORATORY ASPESIS

Dental prosthesis, appliances or impressions brought into the laboratory may be contaminated with microorganisms. All impressions, occlusal rims, prosthesis, face bow forks or bite registrations should be thoroughly cleaned and rinsed of all debris before being handled in the on-site laboratory or sent to an off-site laboratory. "Wet" impressions or appliances should be placed in an impervious bag prior to transportation to an off-site laboratory.
Good communication is required to confirm that appropriate cleaning occurs in the oral health facility and disinfection procedures are performed at the dental laboratory. This will ensure that materials are not damaged or distorted because of disinfectant overexposure.
Clinical materials and devices that are transported from an oral health care facility to an off-site laboratory must follow provincial and municipal regulations.
Manufacturers' instructions should be consulted regarding the stability of specific materials during disinfection.
A separate receiving and disinfecting area should be established in the laboratory to reduce contamination. The dental laboratory staff must perform disinfection procedures before handling the material or device. If during manipulation of a material or appliance a previously undetected area of blood or other organic debris becomes apparent, cleaning and disinfection procedures should be repeated.
Dental laboratory staff should wear appropriate PPE (mask, gloves and protective eyewear) until cleaning and disinfection is completed (see IPC-03).
If laboratory items (burs, polishing points, finishing wheels, pumice or laboratory knives) are used on contaminated or potentially contaminated appliances, prosthesis, or other material, they should be heat sterilized, disinfected between patients or discarded.
Heat-tolerant items used in the mouth (metal impression trays or face bow forks) must be cleaned and heat sterilized before being used on another patient. Items that do not normally contact the patient, prosthetic device or appliance, but frequently become contaminated and cannot withstand heat sterilization (articulators, case pans or lathes) should be cleaned and disinfected between patients, according to the manufacturer's instructions. Pressure pots and water baths should be cleaned and disinfected between patients. Environmental surfaces should be barrier- protected or cleaned and disinfected in the same manner as in the dental treatment area (see IPC-05-01).
Waste generated in the dental laboratory (disposable trays or impression materials) may be discarded with general waste unless municipal bylaws indicate otherwise. Dental laboratory staff should dispose of sharp items (burs, disposable blades and orthodontic wires) in puncture-resistant containers.
Appliances and prosthesis delivered to the patient should be free of contamination. If the dental laboratory staff provides the disinfection, an intermediate-level disinfectant should be used and the item placed in a tamper-evident container before returning the item to the oral health care facility. If such documentation is not provided, the oral health care facility should provide final disinfection procedures.

Denture Polishing Area: A separate polishing area must be established for new dentures (never been inserted into the oral cavity) and existing dentures (has been previously inserted into the oral cavity). If a two-sided polishing lathe is used for this procedure, a suction or closed vacuum must be used to consider the two sides separate. If no suction or vacuum exists, a separate polishing area with a different lathe is required. The use of eye protection, masks and gowns is advised when polishing as the aerosols produced can be harmful and/or contain pathogens.

- New Denture: a denture that has not yet been inserted into the oral cavity. All polishing cones, buffs and wheels should be sterilized weekly. The pumice pan should be emptied, washed and disinfected weekly as well. The pumice

should be wet with a low-level disinfectant solution that has an efficacy duration matching or exceeding the period between changing of the pumice.

- Existing Denture: a denture that has been inserted in the mouth including post insertion adjustments on new dentures and post processing polishing or relined dentures. The denture must be disinfected prior to being brought into the polishing area. Polishing cones, buffs and wheels must be sterilized after each patient use. They must remain dry and bagged until point of next use. The pumice should be wet with a low-level disinfectant and it should be discarded after each patient use. The pumice pan should be washed and disinfected as well.

## IPC-06-10 – LASER / ELECTROSURGERY PLUMES AND SURGICAL SMOKE

The thermal destruction of tissue, during procedures that use a laser or electrosurgical unit, creates a smoke by-product, which may contain viable microorganisms. The electromagnetic energy transferred into the tissues, may release a heated plume that includes particles, gases (hydrogen cyanide, benzene, and formaldehyde), tissue debris, viruses and offensive odours.

SDTA Registrants should use work practice and engineering controls to avoid inhaling or otherwise coming in contact with laser and electrosurgical plumes and surgical smoke (check manufacturer's recommendations). These practices may include using:

- Routine Practices (high-filtration surgical masks and possibly face shields)
- Central room suction units with in-line filters to collect particulate matter from minimal plumes
- Dedicated mechanical smoke exhaust systems with a high-efficiency filter to remove substantial amounts of laser plume particles

High volume evacuation systems should be used to improve the quality of the operating field.

## IPC-06-11 – PATIENTS INFECTED WITH M. TUBERCULOSIS

Patients infected with M. tuberculosis (TB) occasionally seek routine or urgent dental treatment. SDTA Registrants, other personnel, and the community served by the oral health care facility are at risk for exposure to TB.

When taking a patient's initial medical history and at periodic updates, SDTA Registrants should routinely ask all patients whether they have a history of TB or symptoms indicative of TB. Patients with a medical history or symptoms indicative of undiagnosed active TB should be referred promptly for medical evaluation to determine possible infectious risk. These patients should not remain in the oral health care facility any longer than required to evaluate their dental condition and arrange for a medical referral. While in the oral health care facility, the patient should be isolated from other patients and oral health care providers. The suspected TB patient should be instructed to wear a surgical mask when not being evaluated and should be instructed to cover their mouth and nose when coughing or sneezing. Elective oral treatment should be deferred until a physician confirms that a patient does not have infectious TB, or if the patient is diagnosed with active TB disease, until confirmed the patient is no longer infectious; typically, 48 hours following institution of anti-tuberculous therapy.

Surgical masks typically used in the oral health-care setting do not prevent inhalation of M. tuberculosis droplet nuclei due to their small diameter, and therefore, Routine practices are not sufficient to prevent transmission of this organism so additional precautions (airborne) may be necessary.

SDTA Registrants treating patients infected with M. tuberculosis should understand the pathogenesis of the development of TB to help determine how to manage such patients.

M. tuberculosis is a bacterium carried in airborne infective droplet nuclei that can be generated when persons with pulmonary or laryngeal TB sneeze, cough, speak or sing. These small particles (1-5 µm) can stay suspended in the air for several hours.

Infection occurs when some susceptible person inhales droplet nuclei containing M. tuberculosis, which then travel to the alveoli of the lungs. Typically, within 2-12 weeks after initial infection with M. tuberculosis, immune response prevents

further spread of the TB bacteria, although the bacteria can remain viable in the lungs for years, a condition termed "latent TB infection". People with latent TB infection usually exhibit a reactive tuberculin skin test (TST) [formerly Mantoux], have no symptoms of active disease and are not infectious. However, people with latent TB infection can develop active disease later in life if they do not receive treatment for their latent infection.

Approximately 5% of persons who have been recently infected and not adequately treated for latent TB infection will progress from infection to active disease during the first 1-2 years after infection; another 5% will develop active disease later in life. Although both latent TB infection and active TB disease are described as TB, only the person with active disease is contagious and presents a risk of transmission. Symptoms of active TB disease include a productive cough, night sweats, fatigue, malaise, fever, unexplained weight loss and occasionally oral ulceration(s). Certain immunocompromising medical conditions (HIV disease) increase the risk that TB infection will progress to active disease at a faster rate.

TB transmission is controlled through a hierarchy of measures, including:

- Administrative controls: Administrative goals of a TB infection-control program include detection of a person with active TB disease and prompt isolation from susceptible persons to reduce the risk of transmission. Although SDTA Registrants and other personnel are not responsible for diagnosis and treatment of TB, they should be trained to recognize signs and symptoms to help with prompt detection. Because potential for transmission of M. tuberculosis exists in outpatient settings, dental practices should develop a TB control program appropriate for their level of risk. SDTA Registrants and other personnel who have contact with patients should have a baseline TST, preferably by using a two-step test at the beginning of employment. The facility's level of contact with patients at risk of TB will determine the need for routine follow- up TST.
- Environmental controls: If urgent oral care is provided for a patient who has, or is suspected of having active TB disease, the care should be provided in a facility (hospital) that provides airborne infection isolation (using such engineering controls as TB isolation rooms, negatively pressured relative to the corridors, with air either exhausted to the outside or HEPA- filtered if recirculation is necessary).
- Personal respiratory protection: SDTA Registrants and other personnel treating patients with active TB must use respiratory protection (fit-tested, disposable N-95 respirators).

## IPC-06-12 – ON-GOING INFECTION PREVENTION AND CONTROL EVALUATION

The goal of an infection prevention and control program is to provide a safe treatment environment for the patient and a safe working environment for the SDTA Registrants and other personnel. This goal is accomplished by reducing the risk of health-care associated (nosocomial) infections in patients and occupational exposures in SDTA Registrants and other personnel. Breaches in infection prevention and control practices are caused by the failure to follow protocols. Effective program evaluation is a systematic way to ensure procedures are useful, feasible, ethical and accurate.

Program evaluation is an essential organizational practice. Evaluation offers an opportunity to improve the effectiveness of both the infection prevention and control program and dental practice protocols. Such program evaluation should be practiced consistently across program areas and should be well integrated into the day-to-day management of the infection prevention and control program.

A successful infection prevention and control program depends on developing standard operating procedures, evaluating practices, routinely documenting adverse outcomes (such as occupational exposures to blood) and work-related illnesses in SDTA Registrants and other personnel, and monitoring health-care associated infections in patients. Strategies and tools to evaluate the infection- control program can include:

- Periodic in-office observational assessments by the facility IPC officer
- Checklists to document procedures
- Annual review of occupational exposures to blood-borne pathogens
- Facility audit by the Practice Enhancement Review Program (PERP) conducted by the SDTA or audit by other regulator.

Effective implementation of infection prevention and control programs is an on-going process, requiring SDTA

Registrants to monitor the scientific literature and to stay abreast of new knowledge of emerging infectious diseases.

## IPC-06-13 – ADDITIONAL CONSIDERATIONS FOR ALTERNATIVE PRATICE SETTINGS

Alternative practice settings include any setting where SDTA Registrants may provide services that are not confined to a conventional clinical operatory. These settings may include, but are not limited to the following:

- Group home
- Long term care facilities
- Rehabilitation facilities
- Private home
- Community center
- Educational facilities
- Hospitals

Due to the lack of standardized dental equipment and patient care equipment (dental units, dedicated waterlines and suctions, etc.) available in many of these settings, SDTA Registrants must take appropriate measures to ensure that infection prevention and control protocols are followed and patient safety is maintained. SDTA Registrants have the responsibility to check any alternative practice setting to review sterilization and disinfection policies before practice begins.

## IPC-06-14 – SELF HANDLING OF INJECTABLES

The transmission of blood-borne viruses and other microbial pathogens to patients may occur due to unsafe and improper handling of injectables (e.g., local anesthetics, drugs, and solutions for sedation).
The following practices must be adhered to when preparing and administering injectables.

Aseptic Technique:

- Perform hand hygiene prior to accessing supplies, handling vials and IV solutions, and preparing or administering drugs.
- Prepare drugs and supplies in a clean area on a clean surface.
- Use aseptic technique in all aspects of parenteral drug administration, drug vial use and injections. Limit access to select trained individuals, if possible.
- Never administer a drug from the same syringe to more than one patient, even if the needle is changed between patients.
- Never store needles and syringes unwrapped, as sterility cannot be assured.
- If an administration set is prepared ahead of time, all drugs should be drawn up as close to use as possible to
- prevent contamination. Once set up, an administration set should be covered.
- Do not use IV solution bags as a common source of supply for multiple patients

Single Dose Vials

Single dose vials, intended for single patient use, typically lack preservatives. The use of these vials for multiple patients carries substantial risk for bacterial contamination and infection.

- Do not reuse single dose vials. Enter the vial once and immediately discard after use.
- Always use a sterile syringe and needle/cannula when entering a vial. Never enter a vial with a syringe or needle/cannula that has been used on a patient.
- Never combine or pool the leftover contents of single dose vials.
- A syringe for the administration of a local anesthetic must only be prepared at the time of use.

Multidose Vials

Any error in following protocols for the correct use of multidose vials can result in the transmission of both bacterial and

blood-borne viral pathogens. Transmission of HBV, HCV, and HIV have been associated with the use of multidose vials. The use of multidose vials for injectable drugs increases the risk of transmission of blood-borne pathogens and bacterial contamination of the vial and should be avoided. Patient safety should be prioritized over cost when choosing between multidose and single dose vials. If multidose vials are used, the following practices must be followed each time the multidose vial is used:

- NEVER re-enter a vial with a used needle OR used syringe.
- Once medication is drawn up, the needle should be IMMEDIATELY withdrawn from the vial. A needle should NEVER be left in a vial to be attached to a new syringe.
- Use a multidose vial for a single patient whenever possible and mark the vial with the patient's name.
- Mark the multidose vial with the date it was first used and ensure that it is discarded at the appropriate time.
- Adhere to aseptic technique when accessing multidose vials. Multidose vials should be accessed on a surface that is clean and where no dirty, used or potentially contaminated equipment is placed or stored. Scrub the access diaphragm of vials using friction and 70% alcohol. Allow to dry before inserting a new needle and new syringe into the vial.
- Discard the multidose vial immediately if sterility is questioned or compromised or if the vial is not marked with the patient's name and original entry date.
- Review the product leaflet for recommended duration of use after entry of the multidose vial. Discard opened multidose vials according to the manufacturer's instructions or within 28 days, whichever is shorter.

## IPC-06-15 – PANDEMIC

In the event of a pandemic SDTA Registrants and other personnel must follow interim infection prevention and control protocols implemented by SOHP regulators, Saskatchewan Health Authority, and the Government of Saskatchewan.

## APPENDIX

### Managing Contamination

Patient Care Items (Modified Spaulding Classification)

| Category | Description | Management | Examples |
|---|---|---|---|
| Critical Items | Penetrates soft tissue or bone | Items that are not single-use disposable must be sterilized and stored wrapped until point of care.<br>Single-use disposable items must not be re-processed.<br>Follow manufacturer's instructions regarding sterilization prior to use. | • Anesthetic syringes<br>• Endodontic instruments, including files (hand and rotary) and reamers<br>• Gauze for surgery<br>• Dental implant instruments<br>• Metal matrix bands prior to use<br>• Mouth mirrors (when used during a procedure where tissue is cut or manipulated)<br>• Orthodontic bands prior to use<br>• Periodontal instruments including ultrasonic tips<br>• Restorative / operative instruments<br>• Rotary burs and diamonds<br>• Dental dam clamps<br>• Scalers<br>• Stainless steel crowns prior to use<br>• Surgical instruments<br>• Surgical suction tips |
| Semi-Critical Items | Touches intact mucous membrane or non-intact skin | Items that are not single-use disposable must be sterilized and stored wrapped until point of care.<br>Single-use disposable items must not be re-processed.<br>Follow manufacturer's instructions regarding sterilization prior to use. | • Articulating ribbon holder<br>• Air/water syringe tips<br>• Handpieces<br>• Crown removing instruments<br>• Dental dam frame and forceps<br>• Impression trays<br>• Lab burs<br>• Nasal hoods<br>• Orthodontic pliers<br>• Facebow<br>• Laboratory knives and spatulas |
| Non-Critical Items | Contacts intact skin only | Items must be protected with barriers and/or cleaned and disinfected between use when contaminated. | • Blood pressure cuffs<br>• Curing lights<br>• Lead aprons<br>• Intra-oral camera and radiograph sensors<br>• Dental dam punch<br>• Laboratory specific instruments<br>• Safety glasses |

**Environmental Surfaces**

| Category | Description | Management | Examples |
|---|---|---|---|
| Clinical Contact Surfaces | Direct contact with SOHCP or other personnel's hands, patient-care items or patient skin | Protect with surface barrier or disinfect with intermediate-level disinfectant. | • Dental chairs<br>• Keyboard and mouse<br>• Dental units and countertops<br>• Doorknobs<br>• Drawer and cupboard handles<br>• Light handles<br>• Radiograph equipment |
| Housekeeping Surfaces | Inadvertent contact with SOHCP or other personnel's hands, patient- care items or dental appliances | Frequent cleaning based on use.<br>If contaminated by blood or saliva use intermediate- level disinfection. | • Floors<br>• Sinks<br>• Walls |

Note: The examples given are for illustration only and these lists are not to be considered exhaustive.
Semi-critical instruments or devices that have been exposed to blood or have the potential to be exposed to blood must be treated as critical. SDTA Registrants must use professional judgment for every instrument, device and surface for their specific practices to ensure that the standards are being met.

Disinfectants

| Category | Examples | Advantages | Disadvantages |
|---|---|---|---|
| Intermediate Level Disinfectant (destroys all vegetative bacteria, mycobacteria, most viruses and most fungi, but not bacterial spores) | • Chlorine-based products (sodium hypochlorite diluted in-office, chlorine dioxide, commercial preparations with surfactants) | • Low cost;<br>• Fast acting;<br>• Readily available. | • Corrosive to metals;<br>• May destroy fabrics;<br>• Inactivated if not well cleaned;<br>• Irritating to exposed skin and mucous membranes;<br>• Chlorine dioxide is poor cleaner;<br>• Unstable when diluted - must be prepared daily. |
| | • Halogens (sodium bromide & chlorine) | • Fast acting;<br>• Simple to mix;<br>• Minimal storage space required. | • Used on hard surfaces only;<br>• Strong chlorine odour. |
| | • Hydrogen peroxide, .5% accelerated | • Fast acting;<br>• Non-irritating;<br>• Odourless<br>• Effective for bioburden removal<br>• Stable and effective on environmental surfaces. | • Slow fungicidal activity;<br>• An oxidizing agent which will accelerate rusting of metal instruments;<br>• Relatively expensive. |
| | • Iodophors<br>• (iodine combined with surfactant) | • Rapid action;<br>• Relatively less toxic and less irritating;<br>• Residual action;<br>• Effective cleaner and disinfectant. | • Stains fabrics and synthetic materials;<br>• Corrosive to exposed skin and mucous membranes;<br>• Inactivated by hardwater;<br>• Unstable when diluted – must be prepared daily unless manufacturer's instructions state otherwise. |
| | • Quaternary ammonium compounds with alcohols ("dual" or "synergized") | • Generally non-irritating;<br>• Non-corrosive | • Older generation had narrow spectrum;<br>• Inactivated by anionic detergents and organic matter;<br>• Can damage some materials.<br>• Rapid evaporation |
| | • Phenolics ("complex" or "synthetic" containing multiple phenolic agents) | • Residual biocidal, action;<br>• Available with detergents | • May be absorbed through skin or by latex;<br>• Degrade plastics with prolonged contact, leave a film on disinfected surfaces or etch glass surfaces |

Disinfectants (cont.)

| | | | |
|---|---|---|---|
| Low Level Disinfectant (destroys most vegetative bacteria and some fungi, and some viruses. They must have a claim for HIV and HBV and be EPA registered hospital grade. | • Hydrogen peroxide 3%<br>• Quaternary ammonium compounds (single, simple or without alcohol) | • Can be used for housekeeping surfaces, non-critical surfaces without blood contamination | • They are not tuberculocidal |

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