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This second year has been professionally rewarding to me. I continue to learn something new everyday and, hopefully, by sharing that information with you will make your practice safer and more efficient. I hope my efforts during the past year have helped all of you who have requested my assistance.

Infection Control continues to evolve as research clarifies issues. During the next year, I will keep all of you informed about new developments and changes as they occur.

As always, I am available to answer your individual calls, e-mails, or letters. You can reach me at the following address and DSN:

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DENTAL INFECTION CONTROL AND OCCUPATIONAL HEALTH COURSE

The sixth annual USAF Dental Infection Control and Occupational Health Course was conducted from 3 May - 7 May 1999. The course again featured a distinguished group of speakers including such nationally recognized authorities as Dr Chris Miller and Dr John Molinari. Our own Air

Force experts were complemented by representatives from the Army, Navy, Veterans

Administration, the Food and Drug Administration and representatives from the University of Texas Health Science Center at San Antonio.

The 2000 Infection Control Course is scheduled for 1 May - 5 May, at the Radisson Hotel in San Antonio. If your additional duties include either infection control or safety -- and you have not yet been trained -- plan to attend! Please mark your calendars accordingly.

1999 ORGANIZATION FOR SAFETY & ASEPSIS PROCEDURES ANNUAL SYMPOSIUM

The 1999 Annual Symposium of the Organization for Safety and Asepsis Procedures (OSAP) was held from 24-27 June in Cincinnati, Ohio. The meeting featured timely information on emerging infectious diseases, evaluating products for safety and efficacy, healthcare workers infected/affected by infectious diseases, and latex allergies. Other topics that were covered included legal implications of universal precautions, ergonomics, instrument management procedures, and dental unit waterlines. Next year's meeting will be held in Portland, Oregon from 15-18 June 2000.

For those who are working in the rapidly changing field of dental infection control and occupational health, the OSAP Annual Symposium offers an unparalleled opportunity to exchange ideas with the top experts in the field and keep abreast of the newest developments. Contact OSAP for information on membership and upcoming programs.

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STATE OF CALIFORNIA REQUIRES SAFETY NEEDLES

The state of California recently signed into law the Midge Bill, effective 1 July 1999, requiring California Occupational Safety and Health Administration (Cal/OSHA) to endorse several changes to the Bloodborne Pathogens Standard. This was enacted to help reduce needle stick injuries to healthcare workers because of the potential for transmission of bloodborne pathogens such as HIV, hepatitis B, and hepatitis C. Nineteen other states have recently introduced similar legislation.

One of the proposed changes to the standard would require employers to provide devices with "engineered sharps protection." This is defined as "a physical attribute built into a needle device used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, which effectively reduces the risk of an exposure incident by a mechanism such as barrier creation, blunting, encapsulation, withdrawal or other effective mechanism." **If a safety needle is available for a certain procedure, such as a dental local anesthetic injection, it must be used.**

The following situations allow for exceptions.

1. It is not available in the marketplace.
2. It will jeopardize the patient's safety or the success of the medical, dental, or nursing procedure (this must be specifically documented).
3. The employer can demonstrate by means of objective evaluation criteria that the engineering control is not more effective in preventing exposure incidents.
4. Reasonably specific and reliable information is not available about the safety performance, in which case the employer must then be actively determining, by means of objective evaluation criteria, whether use of engineering controls will reduce risk of exposure incidents.

Cal/OSHA will finalize revisions and issue a permanent rule by the end of 1999. Federal OSHA is reviewing responses from interested parties on this issue.

Many dental providers and organized dental groups have expressed apprehension over the impact these requirements may have on the practice of dentistry. To date there is a lack of independent data to verify the safety and efficacy of the currently available devices.

The Academy of General Dentistry (AGD) emphasized to Federal OSHA that dentistry is safer than medicine with regard to needle stick injuries. The AGD's leadership and its Council on Legislative and Governmental Affairs stated "the risk of disease transmission from needle stick injuries in the dental office is minimal; the benefit of using self-sheathing or other needles is negligible; and the potential downside of using "safer" syringes, which are typically bulky and awkward to use, is great....Scientific data demonstrate the rate of percutaneous injury in dentistry is very low (2 to 3 injuries per year) and that the rate of actual disease transmission is essentially zero."

Industry has developed several alternatives to the standard dental syringe used to deliver local anesthesia. Unfortunately these devices often are poorly designed, have sticky plungers, and are awkward to use. Some clinicians also find they make it difficult to see the injection site and may, therefore, contribute to percutaneous injury.

The AGD comments conclude that mandating specific devices for dental offices is not supported at this time. The organization believes continued educational efforts to educate dental healthcare workers on safer methods and techniques are warranted.

NEEDLE STICK PREVENTION BILL

The House of Representatives introduced a bill on 20 May 1999 that seeks to reduce the risk of contracting bloodborne diseases from needle stick injuries among healthcare workers. The bill would require the Occupational Safety and Health Administration (OSHA) to modify the existing Bloodborne Pathogens Standard. This potential change would require healthcare employers to use "needle-less systems" and other safe instruments to protect healthcare workers. Employers would be required to develop a written exposure control plan to identify and select safe needles and sharps for

each work facility. New training requirements to ensure safe use also would be required. Employers would be mandated to maintain a needle stick injury log to record incidents involving needles and other sharp instruments. This reporting provision would be separate from the more general injury and illness reporting already required by OSHA.

PERCUTANEOUS INJURY/BODY FLUID EXPOSURE PROTOCOL

A percutaneous injury or body fluid exposure can be a very emotional experience, necessitating the need for an established written postexposure protocol.

The following steps are recommended by the Centers for Disease Control and Prevention (CDC) for postexposure prophylaxis (PEP).

1. Immediately clean the needle stick or wound with soap and water. Thoroughly flush blood and body fluid splashes to nose, mouth or skin with water. Appropriate agents for eye splashes are clean water, 0.9% sodium chloride solution, or sterile irrigants.
2. Report the exposure to the designated infection control or safety supervisor. Proceed to primary care for evaluation and possible treatment. The evaluation should include completing a standard blood and body fluid exposure form. Reporting the injury promptly is essential for determining whether PEP is indicated. **Several studies indicate PEP should be started within 2 hours.** If PEP is started, follow-up monitoring to track drug toxicity and treatment response is important. The CDC provides an HIV PEP treatment hot line if questions about treatment or advice are needed. Call 1-888-448-4911, if desired.
3. As soon as possible after exposure (within 24 hours) baseline tests for HIV, hepatitis B, and hepatitis C should be conducted. Periodic follow-up testing is recommended. Detailed information concerning the source patient should be part of the evaluation process if possible. **Documentation of the processes should be placed in the medical record.**

BOIL-WATER ADVISORIES

The Centers for Disease Control and Prevention (CDC) recommend the following procedures for dental clinics during boil-water advisories. These procedures should be followed in addition to specific instructions issued by state or local health departments during advisories.

While a boil-water advisory is in effect:

1. Water from the public water system should not be delivered to the patient through the dental unit, ultrasonic scaler, or other dental equipment that uses the public water system.
2. Patients should not use water from the public water system for rinsing but should use bottled or distilled water.
3. Dental workers should not use water from the public water supply for hand washing. Instead, antimicrobial-containing products that do not require water for use, such as alcohol-based hand rubs, can be used.

When the boil-water advisory is canceled:

1. First, incoming public water system lines in the dental clinic should be flushed. All faucets in the dental setting should be turned on completely for at least 30 minutes. This includes waterlines to dental equipment that use the public water system.
2. After the incoming public water system water lines are flushed, dental unit water lines should be disinfected. The dental unit manufacturer should be consulted to determine the appropriate procedures to disinfect the dental unit water lines.

Alternative water sources, such as separate water reservoirs that have been cleared for marketing by the Food and Drug Administration, can be used to circumvent the contaminated water entering the dental unit.

CALIFORNIA INTRODUCES BILL TO ENFORCE DENTAL UNIT WATER QUALITY

In February 1999, the California State Legislature introduced a bill that would require California dentists to ensure that dental treatment water meets certain standards. The bill reads, "Existing law provides for licensure and regulation of the practice of dentistry, and provides that certain acts constitute unprofessional conduct. This bill would

provide that it is unprofessional conduct for a dentist who owns, operates, or manages a dental office to allow water exiting a dental unit waterline to contain more than 200 colony forming units per milliliter of aerobic mesophilic heterotrophic bacteria on and after January 1, 2001.”

The bill was referred to the Senate Committee on Health in March 1999. If this bill becomes law, the State Board of Dental Examiners will carry out enforcement.

ERGONOMICS REGULATION DRAFT ISSUED

The Occupational Safety and Health Administration (OSHA) issued a draft of ergonomics regulations on 19 February 1999. Under the draft proposal, employers must develop an ergonomics program for employees in jobs or tasks within general industry including dental offices.

The ergonomics program must include the following: management commitment and employee participation, hazard identification and information, job hazard analysis and control, training, medical management, and program evaluation.

On 3 March 1999, Congress introduced a bill to delay the OSHA ergonomics regulation until the National Academy of Sciences (NAS) completes its congressionally required in-depth study on the issue. NAS was instructed to conduct a two-year study of all available scientific literature examining the cause-and-effect relationship between repetitive tasks in the workplace and musculoskeletal disorders. On May 19, the House Education and Workforce subcommittee on workforce protections approved this bill.

GLOVE FEATURES

When choosing a glove, it is important to understand the key attributes that denote a quality product from an inferior one. The most important features are barrier protection and allergen content. The following features should be considered when choosing gloves.

Barrier protection

Gloves are used to protect against cross-infection. A glove should provide a continuous and durable layer of material between the healthcare worker and the patient. The material should be flexible, free from holes, breaches and cracks and should be strong enough to prevent breakage during normal use.

Tensile strength

This is a measure of how much force is required to break a glove. Tensile strength is a good determinant of barrier protection. A glove that breaks easily provides poor barrier protection.

Elongation

This is a measure of how far the glove film can stretch before breaking. This is an important measure of barrier protection since gloves are routinely stretched during donning and use. Gloves must be able to withstand stretching without tearing.

Modulus

This is the amount of pressure a glove exerts on hands in a stretched state. A high modulus glove will feel tight; a low modulus glove will feel baggy.

Crosslinking

This refers to the chemical bonding structure of the glove film. Crosslinked films are stronger due to linked individual molecules providing a continuous interlocked structure. Poorly crosslinked films develop holes when flexed or stretched during donning and normal use.

Protein content

This refers to the amount of natural rubber latex (NRL) proteins found in a glove. Lower protein levels are thought to reduce the potential for allergic sensitization. Protein content is measured in a variety of different assays. There is controversy over which assay is the most sensitive, accurate, and comprehensive. The Food and Drug Administration (FDA) has specified that protein levels should be measured using the Modified Lowry assay for total protein content. The

unit of measure is micrograms of protein per gram of latex. 50 micrograms per gram of latex is the lowest protein content that manufacturers can legally claim.

Chemical content

All gloves contain a variety of chemicals added during the manufacturing process. These chemicals serve a critical purpose in producing a functional and economical glove. The chemicals accelerate processing, stabilize compounds, and provide resistance to oxidization. The additives are either used up in the manufacturing process or are transformed and become part of the molecular structure. Most manufacturers wash (leach) their products to reduce the presence of potentially irritating or allergenic chemicals in the final product. Despite these efforts, some healthcare workers may react to residual chemicals. In these situations, it is important to determine which chemicals an individual is sensitive to through proper diagnostic testing by an allergist or dermatologist before continued glove use.

Powder content

Powdered gloves contain either oatmeal or cornstarch. The purpose is to aid in donning and removing the gloves. Powder-free gloves reduce irritant content and minimize airborne allergens.

Fit and comfort

Gloves made of various materials fit differently because the physical attributes like elongation and modulus vary considerably. Surgical gloves (hand-specific) fit more comfortably than ambidextrous gloves for two reasons. First, surgical gloves are designed with the thumb rotated slightly forward to more closely resemble the human hand. Second, surgical gloves are typically available in seven to eight different sizes, where ambidextrous gloves are available in three to five sizes. However, surgical gloves are more expensive than ambidextrous gloves.

Chemical resistance

Chemical resistance is not the primary purpose of a treatment glove, but there are many instances where a provider may handle harsh chemicals. Chemical resistance of different glove materials

varies from poor to excellent. It is important to select a glove material that is appropriate for the particular type of chemical exposure.

Economy

Prices of gloves vary depending on the type of material. Latex and vinyl gloves are inexpensive, while other synthetic materials like nitrile and specialized polymers are extremely expensive. Powder-free gloves are slightly more expensive than powdered gloves due to the extra processing.

GLOVE MATERIALS

There are many types of gloves available for healthcare workers to choose from. Each has advantages and disadvantages. The following section will discuss the pros and cons of each type of glove so an informed decision can be made during purchasing.

Natural rubber latex (NRL)

This is commonly referred to as "latex" gloves. NRL gloves are manufactured from a milky fluid from trees found in Southeast Asia. Latex is harvested by cutting a groove in the bark of the tree and collecting it via a spout. The liquid is then refined and treated to form the raw fluid used to make gloves. In the processing, a porcelain mold shaped like a hand is dipped into the latex concentrate to create a thin, uniform coating on the form. The latex film is then vulcanized which drives out moisture and crosslinks molecules to create a strong and uniform film. This crosslinked structure gives NRL extraordinary strength and elasticity and the ability to stretch to many times its original length without creating holes or tearing. Also, NRL has the tendency to seal itself if a small hole occurs. These properties, plus its relatively low cost, make NRL an excellent material.

However, NRL gloves have recently come under scrutiny due to increased reports of allergic reactions. Manufacturers are attempting to solve these problems by reducing allergen levels through formulation changes, extensive washing, and elimination of glove powder via chlorination. There has also been some progress in reducing chemical allergens for NRL. Many companies have eliminated thiurams and mercaptobenzothiazoles, two chemicals that can cause allergic reactions.

Today NRL remains the gold standard for barrier protection due to its strength, elasticity, and low cost. When considering NRL, dental clinics should purchase low-protein, powder-free gloves.

Nitrile

Nitrile is a petroleum-based, crosslinked rubber product that is manufactured similar to NRL. This material exhibits high strength and good elasticity like NRL. Nitrile offers many advantages over NRL including: no NRL proteins, greater puncture resistance, and better barrier protection against harsh chemicals. Nitrile is also unique in that it tends to conform to the shape of the wearer after a few minutes of use.

The shortcomings of nitrile are its higher modulus and higher cost compared to NRL. It is also important to note that nitrile is produced with the same type of chemical accelerators as NRL. As a result, personnel with chemical allergies to the accelerators found in NRL may not benefit by switching to nitrile. Also, nitrile has a strong chemical odor that some individuals may find offensive.

Neoprene

Neoprene is a petroleum-based, crosslinked material. Physical properties include high tensile strength, good elasticity, and good resistance to chemical solvents. Neoprene has a modulus similar to NRL, making it very comfortable to wear for long periods of time.

Negative factors are that it contains the same chemical accelerators as NRL, and has poorer tear resistance, poorer puncture resistance, and higher cost than NRL.

Polyurethane

Polyurethane is a petroleum-based, crosslinked film. This product has all the benefits of latex like high strength, elasticity, comfort, and barrier protection, but contains no NRL proteins or chemical accelerators. Polyurethane gloves have minimal odor and excellent puncture/abrasion resistance but are very expensive compared to latex.

Polyvinylchloride (PVC)

This product is commonly known as vinyl and is a petroleum-based film but is not molecularly crosslinked. Lack of crosslinking results in the vinyl molecule separating when stretched or flexed. This may lead to small holes and breaches during use.

Vinyl contains no NRL proteins but does contain a variety of potentially-allergenic catalyst residues. It exhibits very low tensile strength, low elasticity, and poor puncture/tear resistance. Vinyl gloves have wrist diameters larger than all other gloves on the market making for a baggy fit around the wrists. This is due to the fact that vinyl cannot be stretched very far. Vinyl can be uncomfortable to wear for extended periods of time. Vinyl is inexpensive, however, and its price is similar to that of NRL.

Copolymers

Copolymers are petroleum-based materials with limited crosslinking. Their molecular structure is similar to vinyl but they have better physical properties. Elasticity and modulus are comparable to latex making them more comfortable to wear, without the large wrist diameters. Copolymers contain no NRL proteins, but contain trace amounts of potentially allergen chemical accelerators. They display less tensile strength/tear resistance compared to latex and cost considerably more.

Powdered gloves

Glove powders are used as a donning agent and mold release agent. Donning agents are usually modified cornstarch or oatmeal powders applied to the inside of the glove to make them easier to place and remove and to prevent the glove from sticking to itself. Mold release powders (calcium carbonate) are applied to the glove mold to make it easier to remove the finished glove.

Powder-free gloves

Powder-free gloves became available in the late 1980s. Chlorination is the process used to produce powder-free gloves. Chlorine dissolves and removes powder and can also reduce proteins and chemicals from the glove surface.

Studies have shown that chlorination can slightly lower tensile strength, but it is usually not enough to affect performance. Excessive chlorination can make gloves slippery but most manufacturers have overcome this problem through careful chlorine dosing. Because of the lack of donning powder, powder-free gloves can be more difficult to place, especially if the hands are moist. Some companies offer a polymer coating on the inside surface to reduce this problem.

The main advantages of powder-free gloves are the reduced allergen levels and irritating effects of powder. The primary disadvantage is difficulty in placement. This can be overcome by completely drying the hands before donning. Also, powder-free gloves are slightly more expensive than powdered gloves.

Low-powder gloves

Some manufacturers offer “low-powder” gloves. Today there are few regulations defining “low – powder” content. In many cases, a “low-powder” version can have the same content as a powdered version. Keep in mind that “low-powder” gloves generally do not offer the benefits of powder-free gloves.

Proper glove selection

When selecting a glove, the dental healthcare worker must consider many factors. The two main considerations are barrier protection and allergen content. Many clinical studies have shown that reducing exposure to latex allergens will reduce the likelihood that a dental provider will become sensitized to latex.

One way to avoid latex allergens is to exclusively use non-latex gloves. Unfortunately, in most cases, non-latex gloves raise the issues of reduced barrier protection and increased cost. Another way of reducing exposure to latex allergens is to utilize powder-free latex gloves that have reduced allergen content. Low-allergen powder-free gloves offer the advantages of latex such as excellent strength, elasticity, comfort, and proven barrier protection without the exposure to high levels of latex allergens. Also, powder-free gloves cost much less than most non-latex gloves.

INFECTION CONTROL Q&A

Q: What is involved in decontaminating instruments?

A: Effective sterilization begins with decontamination. Workers need to protect themselves from blood and body fluids while performing decontamination activities. This includes wearing protective equipment (impervious gown, head cover, shoe covers, cuffed gloves, and face shield or goggles).

A variety of agents are available to clean instruments and devices. It is important to remember that Material Safety Data Sheets (MSDS) for all chemicals should be reviewed with all employees prior to use and retained for future reference.

Both manual and mechanical cleaning (the preferred method) can be utilized. Manual cleaning is usually reserved for items that cannot be processed mechanically, cannot be immersed, or are very delicate. Certain practices are essential for effective cleaning, including disassembly of the device (if recommended by the manufacturer), use of the proper cleaning implement (for manual cleaning), and the proper positioning and loading of instruments/devices in baskets for mechanical cleaners.

“If you can’t clean an item, you can’t sterilize it properly!”

Q: What are your recommendations regarding provider fingernails for those involved in active patient care?

A: The fingernails are a common area to trap blood and debris, which are not easily removed during handwashing and may remain impacted for days. Nails should be kept short (no longer than the fingertips), clean, and healthy because most microorganisms found on the hands are located under and around the fingernails. Long nails make glove placement more difficult, may increase glove perforations, and may scratch or gouge patients during treatment. If polish is worn, clear polish is preferable because dark colors obscure the fingernail bed and reduce the likelihood of careful cleaning. Artificial nails are unacceptable. There are many reports of increased fungal/bacterial

infections due to hidden microbes under artificial nails from ineffective handwashing.

Q: What role do chemical disinfectants play in an infection control program? Should we brief the staff about disinfectants? What features are important?

A: Chemical disinfectants are an essential part of an infection control program. When used properly, disinfectants can help control the environment and make the dental clinic a much safer place for patients and dental healthcare workers.

In many clinics, very little emphasis is placed on the proper selection and application of chemical disinfectants. It is important to establish a system that aids workers in using chemicals wisely. The goal should be to ensure all staff members understand the types of chemicals used and how to properly use them.

It is important to stress the difference between cleaners that remove soil but do not kill microbes, and disinfectants, which are designed to kill some microorganisms. Many clinics choose agents that are both cleaners and disinfectants. This saves resources and time. Dental clinics must make the correct choice when selecting chemical disinfectants.

Employees should understand that not all disinfectants are of equal strength. Disinfectants are generally grouped into three categories: low level, intermediate level, and high level. Dental clinics need to select the appropriate strength disinfectant for the job. Low- and intermediate-level disinfectants are generally used to disinfect surfaces. High-level disinfectants are usually used to disinfect semi-critical items.

At each of these levels there are several different chemical types from which to choose. Factors influencing selection include application, item compatibility, and time. Every worker should be provided with basic information about the types of chemical disinfectants used in their clinic. Training should include information about the strength and limits of each disinfectant and its proper utilization.

Chemical compatibility with the item to be disinfected is a major consideration in selection. It is important to remember that some disinfectants

can have a very detrimental effect on specific materials, resulting in immediate damage or long-term effects that can shorten the life of an item.

Proper disinfection begins with selecting the right product, but it must also be applied correctly. Often, failures encountered with disinfectants are related to human error. To avoid problems, read the label first and then follow the instructions exactly.

The label will provide information about the product's ability to kill specific microbes and give guidelines for proper application. Failure to follow these instructions may result in failure to achieve the desired results. Also, disinfectants must be used in the right concentration for efficacy, meaning they must be measured exactly. If the concentrate is too diluted, it may not be adequate to do the job. Another problem with improper measurement is using too much. Solutions that are too strong will tend to be less effective as well. Using more chemicals than are needed also results in increased exposure to personnel and increased operating costs for the clinic.

Along with selecting the proper disinfectant and mixing it correctly, all staff members should ensure that items to be disinfected have been properly prepared. Disinfectants must come in direct contact with all surfaces to work completely.

Once a disinfectant has been applied correctly, it must remain in contact for the labeled contact time. Again, remember that successful use depends on the user. The chemicals will only do what the label claims and are unable to compensate for human error. Success is based on proper preparation, precise dilution, correct application, and adequate exposure time.

Misuse of disinfectants leads to a false sense of security. Improperly-processed items may look clean and safe which lull the user into thinking all is well. When this happens, the risk of cross-contamination is increased, and an unsuspecting dental healthcare worker or patient may come into contact with these items. Inadequate disinfection processes lead to failure of the clinic infection control system. Prevention requires that all personnel understand their role in chemical disinfection.

Q: What is flash sterilization, and is it appropriate for use in the dental clinic?

A: The Association for the Advancement for Medical Instrumentation defines flash sterilization as a “process designed for the steam sterilization of items for immediate patient use.” The intent of the flash cycle is to sterilize an instrument that has become contaminated during a surgical procedure, or has not been included in a wrapped set, or when there is not enough time to use the whole cycle. Flash sterilization involves operating the sterilizer at a higher temperature for a shorter period of time. Instruments processed using the flash cycle generally lack a wrapper and are hot and wet. This means that the item(s) must be used immediately; there is no “shelf life.”

The manufacturer preprograms the equipment used for flash sterilization. Some prevacuum flash sterilizers offer an “express” cycle allowing for the use of a single wrapper, which facilitates transport. Some rigid sterilization containers are also available for use with the flash cycle.

When doing flash sterilization, the following steps are recommended.

1. Preclean the item(s).
2. Place the properly prepared item(s) in the sterilizer with a chemical indicator.
3. Select the appropriate cycle and begin processing.
4. Document the flash cycle including sterilizer identification, date/time, time/temperature of cycle, operator, load contents, (optional: procedure, provider, and patient identification).

In addition to monitoring each flash cycle, all sterilizers must be biologically monitored for all sterilization modes according to clinic policy.

Flash sterilization should not be used routinely or as a substitute for purchasing additional instruments or simply to reduce instrument-processing time. Doing so could jeopardize sterility assurance.

Q: Is backflow possible when using a saliva ejector?

A: Backflow, meaning reverse flow, can occur from the low-volume suction line through the saliva ejector tip and into the patient’s mouth. There

have been some recent studies which demonstrate possible cross-contamination between dental patients due to backflow from the saliva ejector. Backflow occurs when there is more negative pressure in the patient’s mouth than in the evacuator tubing (this can occur when the patient uses the saliva ejector as a straw). When this happens, there exists the possibility that material from the mouth of a previous patient may remain in the vacuum line of the saliva ejector and be aspirated into the mouth of the next patient being treated. Data also suggest the possible existence of an infection risk during backflow from potential pathogens shed from the biofilm in the tubing in low-volume suction lines.

Factors contributing to backflow are position of the suction tubing, simultaneous use of other evacuation equipment, and whether the patient’s mouth is closed around the saliva ejector. Studies have shown that gravity pulls fluid back toward the patient’s mouth whenever a length of the suction tubing holding the tip was positioned above the patient’s mouth or when an excess of fluid collected in the tubing attached to the unit was above the patient’s head. Backflow into a saliva ejector is also likely to occur when high-volume evacuation is used in an adjacent operatory because this creates a drop in pressure.

At this time the American Dental Association and the Centers for Disease Control and Prevention are not aware of any adverse health issues when using saliva ejectors. However, the following guidelines are recommended: inform patients not to close their lips around the saliva ejector tip during use; let the tubing hang below the patient’s head when removing fluid during and after treatment; and rinse the low-volume suction line between patients. It is also recommended that the suction line be disinfected daily.