
***In* CONTROL**

The Dental Infection Control Supplement to Dental Items of Significance



NUMBER 14

January 2000

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Revisions to DIS #37 will be published in May 2000 entitled as "Year 2000 Dental Infection Control Guidelines." This update will provide the most current information in the ever-changing field of dental infection control. As always, I will do my very best to keep each of you informed of changing developments as they happen. If you have questions, please contact me via telephone, e-mail, or letter. You can reach me at the following address and DSN:

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If you would like to contribute an item to this publication, please do not hesitate to contact me.

DENTAL INFECTION CONTROL AND OCCUPATIONAL HEALTH COURSE

The seventh annual USAF Dental Infection Control and Occupational Health Course will be conducted from 1-5 May 2000, at the Radisson Hotel in San Antonio. The course will feature a distinguished group of speakers including such nationally recognized authorities as Dr Chris Miller and Dr John Molinari. Also representatives from the Army, Navy, Veterans Administration, and the Centers for Disease Control will complement our own Air Force experts on current issues in infection control and occupational health/safety.

There will be 20 funded quotas this year for the Infection Control Course. With fewer funded quotas available, you will need to plan early in order to attend the course.

All active duty USAF personnel who are **not** command-funded make application through:

HQ AFPC/DPAMD
550C St. W STE 25
Randolph AFB TX 78150-4729

All non-USAF personnel (including Army, Navy, VA, Public Health) make application through:

Mr. Chuck Deosdade
USAFSAM/TA
2602 West Gate Rd
Brooks AFB TX 78235-5252
DSN 240-4681/80
(210) 536-4681/80
FAX 240-1446

If your additional duties include either infection control or safety -- and you have not yet been trained -- plan to attend!

ENLISTED ATTENDEES FOR THE USAF DENTAL INFECTION CONTROL AND OCCUPATIONAL HEALTH COURSE

A total of 20 unfunded quotas have been set aside for selected enlisted personnel to attend the 2000 USAF Dental Infection Control and Occupational Health Course. These individuals will be eligible to earn a certificate of course completion.

This course is at a graduate level, and it is prudent to carefully select enlisted personnel for attendance. Experience has shown that enlisted personnel who meet the following criteria will benefit the most from the course:

1. Current duties: Individual is serving as the NCOIC of the clinic infection control or safety program.
2. Academic credentials: Individual has the educational background to obtain maximum benefit from the course. Typically two years of college or an associate degree in the life sciences is helpful.
3. Clinical experience: Individual has sufficient work experience to obtain maximum benefit from the course.

If your Dental Infection Control or Safety OIC/NCOIC has not been trained, they should be given priority for course attendance. Contact Col Bartoloni at DSN 240-3502 for further information.

2000 OSAP ANNUAL SYMPOSIUM

The 2000 Annual Symposium of the Organization for Safety and Asepsis Procedures Research Foundation (OSAP) will be held from 15-18 June 2000 in Portland, Oregon. The meeting will feature timely updates on several dental infection control and office safety issues.

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 to keep abreast of the newest developments.

Contact OSAP at (800) 298-OSAP (6727), or check their homepage at www.osap.org for information on membership and upcoming programs.

DENTAL UNIT WATERLINE UPDATE

The television show "CBS This Morning" presented a segment entitled "Dental Water May Be Harmful" which aired on 11 and 12 October. The show made several statements including: (1) dental water is "dirty" and makes people sick (2) dentists have kept this "dirty little secret" for 30 years (3) 2 lawsuits by patients won settlements and (4) dentists have many ways to keep their lines clean.

Stories like this make it imperative that all dental healthcare workers understand the key issues regarding dental unit waterlines and what steps the American Dental Association (ADA) has recommended.

In 1996, the ADA issued the following guidelines to maintain the quality of water in dental unit waterlines.

- (1) Waterlines, without the handpiece attached, should be allowed to run and discharge water for several minutes at the beginning of each clinic day.
- (2) High-speed handpieces should be run to discharge water and air for a minimum of 20 to 30 seconds after use on each patient.

- (3) Dental personnel should routinely follow the instructions provided by the dental unit manufacturer for the proper maintenance of waterlines.
- (4) Use of commercial options for improving water quality should be considered. However, the safety and effectiveness of some of the available options is limited.
- (5) Sterile saline or sterile water should be used as a coolant/irrigant when surgical procedures are performed that involve the cutting of bone.

The ADA Seal of Acceptance program now evaluates equipment and products that claim to improve the quality of water used in dental treatment. The ADA would like all readers to know the following facts about dental water quality:

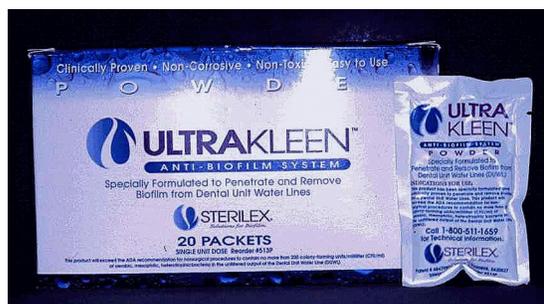
- (1) Low levels of microorganisms are normally present in all municipal water systems.
- (2) A thin layer of microorganisms, known as biofilm, accumulates in common devices used to transport water, such as showerheads, faucets and fountains. Biofilm may be present in your home or office, as well as in the waterlines of the handpieces used for dental procedures.
- (3) There are no scientific reports linking illness to dental unit waterlines.
- (4) The Center for Disease Control & Prevention (CDC) joins the dental profession in assuring patients that dental waterlines pose no cause for concern about public health.
- (5) Both the ADA and CDC have long recommended standard infection control procedures in the dental office, which include flushing waterlines at the beginning of each clinic day and between patients, and sterilization of dental handpieces between patients.
- (6) Scientific evidence demonstrates no adverse health effects from the water in dental unit waterlines. Nonetheless, as an organization dedicated to prevention, the ADA encourages patients with immune systems weakened by disease or medications to inform their dentist at the beginning of any office visit.
- (7) Moreover, the ADA has taken the initiative in calling on researchers and manufacturers to improve, even more, the quality of water used in dental patient care.
- (8) As a result of the ADA's commitment to improving water quality in dental offices, products recently cleared by the Food & Drug Administration (FDA), such as new water filtration systems, improved disinfectants, and dental units that are not dependent on municipal water supplies, are already in use and more are on the way.
- (9) Safety in the dental office is the top priority of the dental profession. As new products become available and research provides us with new technologies, the dental profession will remain committed to ensuring that the highest possible quality water is used in dental care.

A-DEC RECOMMENDS NEW PRODUCT FOR DENTAL WATERLINE DISINFECTION

A-dec, Inc. (800-547-1883) continues to research dental waterline asepsis products and procedures. A 1:10 bleach solution has long been recommended to control microbial counts in dental unit water. Today, several new products are available as alternatives to bleach for waterline disinfection. A-dec recently has recommended Ultra-Kleen, manufactured by the Sterilex Corporation (800-511-1659), as an alternative to bleach.

Recently, Ultra-Kleen was cleared to market by the Food and Drug Administration. Sterilex states that "[Ultra-Kleen] has been specifically formulated and clinically proven to clean deposits and control bacterial contamination in dental unit waterlines." Studies have shown that Ultra-Kleen, when used according to printed instructions, is:

- (1) Effective in cleaning dental unit waterlines.
- (2) Consistent in producing good results when used in waterline treatment.
- (3) Easier to use than bleach.
- (4) More forgiving than bleach in reducing harmful effects on the dental unit water system.



Ultra-Kleen is an alkaline peroxide powder that is mixed with eight ounces of warm water, and run through the dental unit water system for an overnight exposure (performed once per week). The next morning, the Ultra-Kleen is purged from the system followed by a fresh water flushing. Users should be aware that the product can cause “foaming” in the waterlines, and can leave a bitter taste, if not properly flushed.

A-dec notes that Ultra-Kleen costs more than bleach but, but because it is less damaging to dental equipment, may potentially reduce repair costs. A-dec emphasizes that bleach is still an option, but Ultra-Kleen has been found to be a better alternative.

NEEDLESTICK ADMENDMENT

On 29 September 1999 the Senate proposed legislation that would require new Occupational Safety and Health Administration regulations to reduce needlestick injuries. The American Dental Association (ADA) has urged the Senate to reconsider legislation that requires medical and dental healthcare workers to evaluate and use “safety needles.” The ADA is concerned because “safety needles” may be inappropriate for dental practices.

The ADA emphasized to the Senate that “safety needles” on the market today have not been shown to be safe and effective. The ADA suggested that legislation intended to reduce needlesticks should recognize the distinction between hospitals and the typical, smaller dental practice.



The ADA urged Senate rejection of the amendment, which later that day was withdrawn. The Senate cited the following reasons for rejection: the dental “safety” devices now on the market have not been shown to be safe and effective; dentistry has an excellent infection control record; and the proposed legislation appears to require dentists to evaluate new technologies for safety and efficacy and to conduct clinical studies and independent product evaluations.

HANDPIECE STERILIZATION

Both the ADA and CDC recommend that dental handpieces be sterilized between patients to prevent transmission of infectious diseases. The main reason a handpiece fails to operate following sterilization is usually due to failure by clinic personnel to follow the manufacturer’s recommendations for handpiece reprocessing. Improper sterilization procedures can damage the ball bearing race in the turbine assembly, which can cause the handpiece to be inoperable or to be difficult to start.

To prevent damage to the turbine assembly, it is important to follow the manufacturer’s guidelines on handpiece maintenance and reprocessing. To maximize handpiece longevity, the unit should be properly cleaned and lubricated. It is also very important to follow the correct sterilization parameters.

Most handpiece sterilization procedures include the following:

- (1) Flush for 20-30 seconds (with or without the bur attached, depending on manufacturer instructions), then remove from hose.
- (2) Clean handpiece with detergent and dry.
- (3) Lubricate (if required).
- (4) Expel excess lubricant (with or without bur attached, depending on manufacturer instructions).
- (5) Clean fiberoptics.
- (6) Place handpiece in autoclave or chemiclave bag.
- (7) Perform sterilization process.
- (8) Flush air and water lines for 20-30 seconds prior to attaching handpiece.
- (9) Clean fiberoptics, lubricate (if required), attach handpiece to hose, expel lubricant (with or without bur attached, depending on manufacturer instructions).
- (10) Handpiece is ready for use.

Other considerations

- (1) Never soak or immerse the handpiece in any fluid or disinfectant.
- (2) Different manufacturers may have different sterilization protocols.
- (3) Do not exceed the manufacturer's temperature recommendations during sterilization.
- (4) Always remove the bur from the handpiece prior to sterilization.
- (5) Always expel excess lubricant from the handpiece.

ANTHRAX VACCINE UPDATE

More than 300,000 members of the U.S. Armed Forces have been inoculated with at least one dose of the anthrax vaccine since the DoD program began last year. To date, more than 1 million injections have been administered with an adverse reaction rate of less than 1 percent. Through 1 October 1999, 425 reports of adverse events associated with use of the anthrax vaccine have been reported. Of those, the Food and Drug Administration (FDA) considers 29 serious events meaning they were either life threatening, required hospitalization, or resulted in permanent disability. Most of these individuals have recovered. The remaining 396 reports describe a variety of symptoms and conditions including injection site edema, injection site hypersensitivity, rash, headache, and fever.

Senior military leaders have testified to Congress about the importance of the mandatory DoD anthrax vaccine program. In September 1999, hearings were held because of congressional concerns about the impact on military readiness of service members refusing vaccinations. DoD stressed to Congress that the anthrax vaccine continues to be a vital part of the military's force protection strategy. Lawmakers placed a provision in the 2000 Defense Appropriations Bill ordering two independent studies regarding the anthrax vaccine. The General Accounting Office will investigate morale problems caused by the vaccination program including effects on recruiting and retention. In addition, the National Research Council will examine the vaccine's effectiveness and safety including type/severity of reactions and differences in reactions by gender.



The health problems reported to the FDA so far “do not signal concerns about the safety of the vaccine.” The FDA continues to view the anthrax vaccine as safe and effective for individuals at risk of exposure to anthrax.

CREUTZFELD-JAKOB DISEASE

In the United Kingdom recent reports of “mad cow disease,” also referred to as bovine spongiform encephalopathy (BSE) and Creutzfeld-Jakob Disease (CJD), have resulted in increased awareness here in the United States. The dental community needs to be informed about this disease because of potential risk of bloodborne transmission.

The disease normally infects cattle and sheep, however a new form called new variant Creutzfeld-Jakob Disease (nv-CJD) has been discovered in humans. The infectious agent is a rogue protein called a prion. This protein is unique because it contains neither DNA nor RNA. It resists inactivation by procedures that affect nucleic acids including treatment with bleach, detergents, proteases, autoclaving at 121 degrees Centigrade, radiation, freezing, and drying.

CJD is a rare and fatal disease of the central nervous system. The disease has a long incubation period (10-20 years) followed by rapidly progressive neurologic deterioration. A characteristic pattern of pathologic changes in brain tissue is followed by death. The true incidence of disease is unknown due to misdiagnosis. Today there is no effective therapeutic treatment other than supportive care.

The American Medical Association's Council on Scientific Affairs has concluded that the risk of a U.S.

resident contracting nv-CJD is minimal. To date there is no evidence of this disease in the U.S. The reason is that this country has adequate regulations to prevent foreign sources of infection from entering the U.S.

Person-to-person iatrogenic transmission is uncommon, but has been reported. Iatrogenic transmission has been reported from the use of neurosurgical instruments that had been inadequately decontaminated after contacting brain tissue of individuals with CJD. Iatrogenic propagation of the disease has involved recipients of human growth hormone, human pituitary gonadotropin, dura mater grafts, and corneal transplants.

In March 1999, the World Health Organization developed infection control recommendations for CJD. To date there have been no published reports of transmission associated with dental treatment. The findings from the WHO are that the risk of transmission in dentistry is very low. The greatest potential occupational risk in dentistry is exposure to blood from an infected patient. Practicing standard-universal precautions will prevent spread. Additional precautions are not warranted. Even though the risk of contracting the disease in the dental office is low, the dental community must be aware of the current understanding of prion disease to address patient concerns and ensure rigorous infection control procedures.

In August 1999, the Food and Drug Administration banned blood donations from tourists who have visited the United Kingdom since 1980. This move was necessary to prevent the possible transmission of blood contaminated with nv-CJD. There are no known cases of disease passing from one human to another through blood, but researchers suspect it is possible.

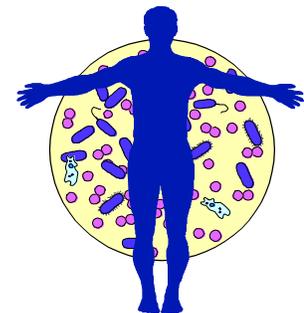
HEPATITIS B

The hepatitis B virus (HBV) is 100 times more contagious than the human immunodeficiency virus (HIV) and infects over 200,000 people per year in the United States. HBV results in 5,000 deaths per year from liver damage or cancer. Currently, there are 1.5 million chronic carriers in the U.S..

Dental healthcare workers are at risk of infection from the HBV through contact with blood and saliva of infected patients. Nearly 40 percent of infected individuals are asymptomatic.

Population growth, foreign travel, emigration, and personal lifestyle preferences have contributed to the spread of HBV. High-risk factors include sexual activity with multiple partners; sharing needles or razors; and living in a household with an infected person. HBV can also be spread from mother to infant during birth. The symptoms are few, and often imitate the "flu." Initial signs include loss of appetite, fatigue, stomach cramps, and vomiting. The disease can progress to jaundice.

Today there is no treatment or cure, but the hepatitis B vaccine has been available since 1982. The vaccine is dispensed as a three-injection series given over a six-month period and can be administered to everyone from newborns to seniors. The vaccine is critically important to individuals in patient care, including dental healthcare workers. More than 20 million U.S. residents and 500 million people worldwide have received the vaccine.



A few years ago a controversy arose in France concerning the safety of the vaccine and a possible relationship to developing multiple sclerosis and other central nervous system problems. Currently, studies are underway to evaluate these claims.

The Centers for Disease Control and Prevention (CDC) has reported that "there is no confirmed scientific evidence that hepatitis B vaccine causes chronic illness, including multiple sclerosis, chronic fatigue syndrome, rheumatoid arthritis, or autoimmune disorders." To address public concerns, the CDC's Vaccine Safety Datalink project has begun to research this topic.

Safety has been affirmed by the National Coalition for Adult Immunizations, which has stated that “you cannot get hepatitis B from the vaccine.” The Coalition noted that the vaccine occasionally has two minor side effects, soreness at the injection site and mild-to-moderate fever.

STEAM STERILIZATION POLICIES

Effective sterilization kills all forms of microbes (bacteria, viruses, fungi, and spores) and is the most important component of instrument processing. Compliance with all facility policies and procedures at all times, by all personnel performing sterilization activities aids in achieving effective sterilization. The first step begins with instrument decontamination. Proper cleaning allows the sterilant (steam) to contact all surfaces of instruments/devices.

When training new personnel in dental instrument processing, the following must be taught:

- (1) How to properly load the sterilizer.
- (2) How to start the sterilizer.
- (3) How to document the items processed in each cycle.
- (4) How to monitor the parameters for specific processes being used.
- (5) How to verify that all parameters have been met by reviewing all charts and printouts.
- (6) How to unload the sterilizer.

Several factors can affect the sterilization processes including:

- (1) Time/temperature/pressure/sterilant parameters. These must be met and maintained for a specific length of time to kill microbes. Each sterilization process has its own parameters.
- (2) The types of microorganisms present on an instrument/device. Some microbes are more difficult to kill than others.
- (3) The numbers of microbes present on an instrument/device.
- (4) The amount and nature of the soils present. Soils can block the sterilant from contacting the microbes.
- (5) Design of instruments/devices can make decontamination difficult.

Always follow the manufacturer's recommendations for proper operation of the sterilizer. Follow the recommended cycle times and temperatures for optimum performance.

The operator should monitor the sterilization process to ensure that all parameters for sterilization have been met. There are several ways to monitor sterilization.

- (1) Administrative controls that include: policies/procedures for specific processes, scheduled maintenance of equipment, decontamination, and packaging.
- (2) Mechanical controls that include: reading and initialing all charts, graphs, and printouts after each cycle to verify that correct temperature, time, and pressure were attained.
- (3) Chemical indicators that include: use of the Bowie-Dick test for pre-vacuum sterilizers, use of internal chemical indicators to verify that specific parameters were met, and external chemical indicators to distinguish processed items from unprocessed items.
- (4) Biological monitoring that includes: use of biological indicators (BI) referred to as spore testing. Spores are the most difficult microbes to kill. The spore used for steam sterilization is *Bacillus stearothermophilus*. All BIs must be documented and the records maintained in accordance with the policies of the facility.

Several organizations have different recommendations regarding frequency of monitoring. Each dental facility should develop its own policy on biological monitoring in conjunction with MTF guidelines.

If a dental clinic has a sterilization malfunction, items need to be identified (if possible), recalled, and reprocessed. All wrapped items should have a lot control number containing the following information: identity of the sterilizer used, date of sterilization, cycle number, and expiration date (if used).

It is important that the operator identify all items processed in each sterilization cycle. At the completion of each cycle, the chart or printout should be reviewed by the operator to ensure that all sterilization conditions were met. A sterilization logbook should be maintained to include at least the following: date of sterilization of each load, identity of sterilizer used, test results (Bowie-Dick, BI), sterilizer operator, and chart/printout.

Sterilized packages must be handled properly to maintain sterility. Aseptic transfer is important. Wrapped packages should be handled as infrequently as possible and only when cooled. Items that are wet, torn, or dropped should be reprocessed.

The sterilizer operator is responsible for daily maintenance of the sterilizer including cleaning of the drain line basket, door gasket, exterior surface, and chamber walls.

There are many excellent sources that provide recommended practices for sterilization such as the Association for the Advancement of Medical Instrumentation (AAMI) and the Association of Operating Room Nurses (AORN). Staff members who perform sterilization activities must completely understand facility policies and procedures to control all variables for effective sterilization.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REVISES BLOODBORNE PATHOGENS COMPLIANCE DIRECTIVE

On 5 November 1999, OSHA issued a new directive entitled Compliance Directive CPL 2-2.44D, Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens.

The directive guides OSHA's compliance officers in enforcing the standard that covers occupational exposure to bloodborne pathogens and ensures that consistent inspection procedures are followed. Also included in the directive are decontamination requirements, guidelines on hepatitis vaccinations and post exposure treatments, and employee training.

The following is a summary of the key revisions:

- (1) Employers must ensure that their exposure control plan reflects consideration and use of commercially available, safer medical devices.
- (2) Employers must emphasize the following: use of effective engineering controls, to include safer medical devices, sound work practices, defined administrative controls, and proper use of personal protective equipment.
- (3) Employers should rely on relevant evidence in addition to the Food and Drug Administration's approval to ensure they are using devices that are effective at preventing exposure to bloodborne pathogens.
- (4) Adds more recent guidelines from the Centers for Disease Control and Prevention (CDC) on vaccinations against the Hepatitis B virus. Incorporates the CDC's guidelines on post exposure evaluation and follow-up for HIV and the Hepatitis C virus.
- (5) Requires effective training and education for employees whenever safer devices are implemented. Stresses interactive training sessions rather than just the use of films or videos that do not provide the opportunity for discussion with a qualified trainer.
- (6) Replaces and updates appendices including: sample engineering control evaluation forms, an Internet resource list, sample exposure control plan, and CDC guidelines pertaining to HIV exposure as well as control and prevention of Hepatitis C, and Hepatitis B vaccinations.

INFECTION CONTROL Q&A

Question: What steps should I take in educating my staff about infection control?

Answer: Infection control education should be a three-part process. The first step is instruction. All staff members involved in patient care must thoroughly understand the basic concepts of microbiology and the potential for cross-contamination in the dental operator. All personnel must understand their

roles in managing the environment around them.

The second part of this process is developing a staff awareness of the importance of infection control. This requires all personnel to look at their everyday activities and identify areas where improvements could be made (i.e., handwashing).

The third part of a good infection control education program combines knowledge and awareness into an "attitude" of infection control. For this to happen, all staff members must be convinced of the importance of good infection control practices, and the fact that their actions must reflect that commitment at all times. Small actions can make a big difference in the quality of care. Attitude is reflected in the staff's behavior.

The goal of the education process is to move all personnel from understanding, to awareness, to a comprehensive attitude. A good infection control program requires incorporating the "how" and "why" of infection control into training processes. It also emphasizes to staff members how their actions affect their environment and patient care.

Question: Who is responsible for regulating chemical germicides?

Answer: The Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) share the regulatory responsibility. Recently the FDA and EPA signed a memorandum of understanding to clarify each organization's authority. General-purpose disinfectants (low/intermediate level) will be regulated by the EPA and will eventually be exempt from 510 (k) requirements. The FDA will regulate high-level disinfectants and chemical sterilants. The EPA will regulate waterline disinfectants.

Question: Are there any recent studies evaluating the barrier properties of gloves?

Answer: Rego and Roley (Am J Infect Control 1999;27:405-10) recently published an excellent article. The article states that glove use in healthcare settings has increased since the late 1980s. The AIDS epidemic, introduction of universal precautions by regulatory agencies, and the subsequent publication of the Bloodborne Pathogens Standard by the Occupational Safety and Health Administration have all contributed to increased glove use.

Barrier effectiveness and performance criteria of gloves used during patient contact are a major concern. Gloves must protect providers and patients from pathogen transmission. Other desirable glove features include tactile sensation, flexibility, comfort, and fit.

The literature contains many reports of Type I and Type IV hypersensitivity reactions to both chemicals and proteins found in natural rubber latex gloves. With the increased reports of reactions to latex, the development of synthetic alternatives with comparable barrier protection is desired.

The Rego & Roley study was undertaken to compare barrier integrity of latex, vinyl, and nitrile gloves during controlled, simulated clinical-use conditions that mimicked patient care activities. Results showed that after simulating in-use conditions, vinyl gloves failed 12% to 61% of the time. Latex and nitrile failed 0%-4% and 1%-3%, respectively. The data indicate that nitrile is an excellent alternative to latex and exhibits similar rubberlike characteristics and barrier properties.

On the basis of this study, nitrile and latex gloves provide better barrier properties than vinyl gloves. Vinyl glove barrier protection was compromised more often during use than either latex or nitrile. The authors conclude that vinyl is an appropriate barrier for nonvigorous, low-risk procedures of short duration. Latex or nitrile are indicated for high-risk situations, including exposure to bloodborne pathogens.

The authors suggested that the following factors be considered when selecting glove materials: material

durability during use, rigorousness and duration of the procedures being performed, the potential for exposure to infectious microbes or hazardous substances, and user safety.

Question: Is hand-scrubbing instruments still acceptable?

Answer: Ideally, mechanical means (ultrasonic cleaners, thermal washers/disinfectors) should be used instead of hand scrubbing, but hand scrubbing is still an acceptable technique. Hand scrubbing recommendations include: using utility gloves, using a clean long-handled brush and keeping instruments submerged in water while scrubbing to reduce spatter, and cleaning only one or two instruments at a time to avoid percutaneous injuries.

Question: Is the wearing of scrubs as clinical attire an option in federal dental clinics?

Answer: A majority of USAF dental facilities utilize scrubs today. It is an excellent option for clinical attire. Scrubs provide a practical and economical way of identifying the healthcare worker, are easy to launder and maintain, provide a very professional appearance for staff members, and reduce costs from unanticipated exposures. The main advantage of using scrubs as clinical attire is that it eliminates the risk of contaminating the military uniform if an unanticipated exposure occurs during patient treatment.

Question: Are there any recommendations for the use of hand lotions while wearing gloves?

Answer: There are very few studies regarding lotion use under gloves. We do know, however, that petroleum-based products accelerate the aging of latex gloves, which results in breakdown. Water-based products facilitate the transfer of chemicals and proteins (important if the wearer is sensitive to these agents) in all types of gloves, but have minimal effect on the breakdown of latex gloves. Most experts believe healthcare providers should only use lotions at the end of the work day. If dermatitis is present, a consult with dermatology is recommended. Today, the consensus opinion is that no lotion be used under any type of glove. It is important to realize that we do not know the effects of petroleum-based hand lotions on synthetic gloves. This is a topic currently being investigated.

Question: I know that the hepatitis virus is an important bloodborne pathogen in dentistry. I've noticed that some hospital-grade disinfectants have a hepatitis kill time on the label and some do not. What is the policy in selecting an appropriate surface disinfectant?

Answer: To make a claim of efficacy against a virus, the manufacturer must test their product against that specific agent. Corroborating studies from independent testing laboratories must be submitted to the Environmental Protection Agency (EPA) demonstrating that such organisms are destroyed by the subject product. The important details of such claims must then be printed on the label. Most manufacturers do not test for the hepatitis virus because testing must be performed on live chimps (Simian Test). This test is unnecessary and is considered unethical by many authorities, especially when other testing is more appropriate.

The most important characteristics for a surface disinfectant are that it be: EPA-registered, intermediate level, tuberculocidal, and hospital grade. The description "hospital-grade" disinfectant means it kills *Staphylococcus aureus*, *Salmonella choleraesuis*, and *Pseudomonas aeruginosa*. Tuberculocidal means it kills *Mycobacterium tuberculosis*. Most manufacturers use *M. tuberculosis* as the benchmark test organism because it is very difficult to kill with germicides (due to a waxy cell wall structure). A TB kill time on a product label provides disinfection assurance because it destroys all pathogens potentially threatening in dentistry.

Precleaning is an essential step because disinfection may not be effective if the surface contains debris.

Chemical agents that accomplish both cleaning and disinfection are more effective than those that simply disinfect because they save resources and time. Usually, water-based products are better cleaners, while EPA-approved iodophors, synthetic phenols, and chlorine compounds are good cleaners/disinfectants. Other considerations are compatibility with the surfaces to be disinfected and whether or not the product will be used for impressions in the lab (for example, chlorine is better than iodophors, which is better than phenols).