INFECTION CONTROL INFORMATION

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CDC DENTAL INFECTION CONTROL GUIDELINES CONTINUING EDUCATION

The CDC *Guidelines for Infection Control in Dental Health-Care Settings, 2003* are now available at www.cdc.gov/oralhealth/infectioncontrol as well as on the DIS Web site. Federal dental service personnel can earn 2 hours of continuing education by successfully completing the test on the DIS Web site at: http://www.brooks.af.mil/dis/infcontrol.htm.

NEW INFECTION CONTROL PRODUCTS

New and innovative products are marketed each month and DIS is unable to evaluate all of them. Because DIS has not had the opportunity to evaluate these products, **we cannot confirm manufacturers' claims** about them. If you would like additional information about the products or are interested in evaluating them please visit http://www.brooks.af.mil/dis/newproducts.htm or the manufacturer's Web site for more information on the following products.

- **1-Shot™ Disposable Dental Needles** (Sultan Chemists, www.sultanchemists.com)
- **LYSOL® I.C.™ Antimicrobial Soap** (Sultan Chemists, www.sultanchemists.com)
- **ComFit® face masks** (Sultan Chemists, www.sultanchemists.com)
- **Virtually Indestructable Keyboard** (Veletec Enterprises LLC sales@Veletec.com)

FREQUENTLY ASKED QUESTIONS

Bead Sterilizers (2/04)

Question: Are bead sterilizers an effective means of sterilization?

Answer: A bead sterilizer is a device using glass beads 1.2–1.5 mm diameter and temperatures 217ºC–232ºC for brief exposures (e.g., 45 seconds) to inactivate microorganisms. This term is actually a misnomer because it has not been cleared by the Food and Drug Administration (FDA) as a sterilizer. Bead sterilizers have been used in dentistry to sterilize small metallic instruments (e.g., endodontic files), however they are not acceptable for sterilization of items between patients. Studies have shown inconsistent heating and significant temperature variation in these devices. Also, there is no system to monitor exposure of the instrument to sterilization conditions or to demonstrate that sterilization exposure parameters have been achieved in the device. Furthermore, there is no way to maintain sterility of items following removal from the bead sterilizer.

The FDA is the governmental agency that regulates medical and dental devices. The FDA has determined that a risk of infection exists with these devices because of their potential failure to sterilize dental instruments and has required their commercial distribution cease unless the manufacturer files a premarket approval application. If a bead sterilizer is used, dental health-care personnel assume the risk of employing a dental device FDA has deemed neither safe nor effective.

Common acceptable methods for heat sterilization include steam, dry heat, and unsaturated chemical vapor. The only sterilization devices that should be used in dental offices are those that have been approved by the FDA.

References

CDC. Guidelines for infection control in dental health-care settings – 2003. MMWR 2003; 52(No. RR-17):1–66.

U.S. Department of Health and Human Services Food and Drug Administration. 21 CFR Part 872 Dental Devices; Endodontic Dry Heat Sterilizer; final rule. *Federal Register* 1997;62(13):2900–2903.

FROM THE LITERATURE

HCV Transmission via Blood Splash into Conjunctiva

Hosoglu, S, Celen MK, Akalin S, Geyik MF, Soyoral Y, Kara IH. Transmission of hepatitis C by blood splash into conjunctiva in a nurse. Am J Infect Control 2003;31:502–504.

This case report describes the transmission of hepatitis C virus (HCV) following a blood splash to a nurse's eye from a patient who was anti-HCV positive. The individual washed her eyes and face with water immediately and reported the incident. Prior to the incident, the nurse was healthy, never used intravenous drugs nor received transfusions. She had not had a tattoo, needlestick accident, or any other risky contact in the last six months. Her anti-HCV and HCV-RNA tests both produced negative results. She was followed-up for anti-HCV and alanine aminotransferase activity. After six months, she presented with sore throat, nausea, vomiting, fatique, and weight loss. She had icterus and hepatomegalia. She began treatment for HCV infection. After one year of treatment, her HCV-RNA test produced negative results and her transaminase levels were normal.

DIS Comment: HCV appears not to be transmitted efficiently through occupational exposures to blood. Follow-up studies of HCP exposed to HCV-infected blood through percutaneous or other sharps injuries have determined a low incidence of seroconversion (mean: 1.8%; range, 0%–7%). One study determined transmission occurred from hollow-bore needles but not other sharps. Although these studies have not documented seroconversion associated with mucous membrane or nonintact skin exposure, at least two other cases of HCV transmission from a blood splash to the conjunctiva and one case of simultaneous transmission of HCV and HIV after nonintact skin exposure have been reported.

Avoiding occupational exposure to blood is the primary way to prevent transmission of hepatitis B virus, HCV, and HIV in health-care settings. All health-care personnel should adhere to recommended standard precautions, which include the use of personal protective equipment (e.g., gloves, masks, protective eyewear, and gowns), and always follow current U.S. Public Health Service/CDC recommendations following an occupational exposure incident.

Selected References

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CDC. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HBV, HCV, and HIV and recommendations for postexposure prophylaxis. MMWR 2001;50(No. RR-11).

Ippolito G, Puro V, De Carli G. The risk of occupational human immunodeficiency virus in health care workers: Italian Multicenter Study, The Italian Study Group on Occupational Risk of HIV Infection. Arch Intern Med 1993;153:1451–1458.

Lanphear BP, Linnemann CC Jr, Cannon CG, DeRonde MM, Pendy L, Kerley LM. Hepatitis C virus infection in healthcare workers: risk of exposure and infection. Infect Control Hosp Epidemiol 1994;15:745–750.

Mitsui T, Iwano K, Masuko K, et al. Hepatitis C virus infection in medical personnel after needlestick accident. Hepatology 1992;16:1109–1114.

Puro V, Petrosillo N, Ippolito G. Risk of hepatitis C seroconversion after occupational exposures in health care workers: Italian Study Group on Occupational Risk of HIV and Other Bloodborne Infections. Am J Infect Control 1995;23:273–277.

Sartori M, La Terra G, Aglietta M, Manzin A, Navino C, Verzetti G. Transmission of hepatitis C via blood splash into conjunctiva. Scand J Infect Dis 1993;25:270–271.

Commonly Used Chemicals and Gloves

Andreassson H, Boman A, Johnsson S, Karlsson S, Barregard L. On permeability of methacrylate, 2-hyroxyethyl methacrylate and triethyleneglycol dimethacrylate through protective gloves in dentistry. Eur J Oral Sci 2003;111:529–535.

Methacrylate monomers are potent contact allergens, and it is known that these substances may penetrate commonly used glove materials. A high permeability could increase the risk of developing allergic or irritant reactions to these chemicals. The aim of this study was to assess the permeability of common gloves used by dental health-care personnel (DHCP) to methyl methacrylate (MMA), 2-hydroxyethyl methacrylate (HEMA), and triethyleneglycol dimethacrylate (TEGDMA) with special reference to combinations with ethanol or acetone. Nine different types of gloves were tested for one or several of these methacrylates. The breakthrough time is the time elapsing from the initial contact of the test chemical with the outside surface of the protective glove to the moment when the chemical is detected on the inside surface of the material. The lag breakthrough time (lag-BT) for neat MMA was $\leq$ 2 minutes for all gloves. For 30% MMA in ethanol or acetone, the latex gloves and the polyethylene-copolymer glove showed the best protection, but the lag-BTs were short for all gloves. For HEMA and TEGDMA, the lag-BTs were generally longer than for MMA. A neoprene glove seemed to be the best choice for protection against penetration of HEMA and TEGDMA.

DIS Comment:

During dental procedures, patient examination and surgeon's gloves commonly contact multiple types of chemicals and materials (e.g., disinfectants and antiseptics, composite resins, and bonding agents) that can compromise the integrity of latex as well as vinyl, nitrile, and other synthetic glove materials. Occupationally related contact dermatitis can develop from frequent and repeated use of hand hygiene products, exposure to chemicals, and glove use. Contact dermatitis is classified as either irritant or allergic. Irritant contact dermatitis is common, nonallergic, and develops as dry, itchy, irritated areas on the skin around the area of contact. By comparison, allergic contact dermatitis (type IV hypersensitivity) can result from exposure to accelerators and other chemicals used in the manufacture of rubber gloves (e.g., natural rubber latex, nitrile, and neoprene), as well as from other chemicals found in the dental practice setting (e.g., methacrylates and glutaraldehyde). Allergic contact dermatitis often manifests as a rash beginning hours after contact and, similar to irritant dermatitis, is usually confined to the area of contact.

When deciding which types of gloves to use DHCP should consider the risks of latex allergy and contact allergy to accelerators and other chemicals used in the manufacture of gloves as well as the need for manual tactility. Furthermore, given the diverse selection of dental materials on the market, DHCP should consult glove manufacturers regarding the chemical compatibility of glove materials.

CDC Dental Infection Control Guidelines Reviewed

Kohn WG, Harte JA, Malvitz DM, Collins AS, Cleveland JL, Eklund KJ. Guidelines for Infection Control in Dental Health Care Settings—2003. J Am Dent Assoc;135:33–47.

The Centers for Disease Control and Prevention (CDC) is the lead federal agency for disease prevention in the United States. It has been 10 years since CDC infection control guidelines for dental health-care settings were last published. During those 10 years, new technologies and issues have emerged, and other CDC infection control guidelines for health-care settings have been updated. In light of these developments, CDC collaborated with experts in infection control to revise its infection control recommendations for dental health-care settings. Existing guidelines and published research pertinent to dental infection control principles and practices were reviewed. This article provides background information, describes the process used to create these guidelines, and lists the new recommendations. The CDC believes that dental offices that follow these new recommendations will strengthen an already admirable record of safe dental practice. Patients and providers alike can be assured that oral healthcare can be delivered and received in a safe manner.

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