



## INFECTION CONTROL For The Dental Team

 SCHOOL OF DENTAL MEDICINE  
University at Buffalo The State University of New York

Continuing Dental Education

Nov. 6, 2008 - 9:00 am - noon  
Nov. 7, 2008 - 1:30 - 4:30 pm  
3 CE Credit Hours

## FRANK C. BARNASHUK, DDS

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## UBbelievers



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## HOW ARE WE DOING IN DENTAL INFECTION CONTROL?

**RECOMMENDATIONS v. REGULATIONS  
Who Does What in Infection Control?**



**USAF Dental Evaluation  
& Consultation Service**

- www.decs.nhgl.med.navy.mil
- InCONTROL Fact Sheet #22, Oct. 2005:  
"Regulations are made by groups who have the authority for enforcement. In contrast, recommendations are made by individuals or groups who have no authority for enforcement".
- A Great Overview of "Players" Involved & Resource for other advice

**JADA May 2003  
Guarding Against Disease**



- John Molinari, Ph.D.
- A History of the Evolution of Our Current Guidelines

**OSAP  
Organization for Safety & Asepsis Procedures**

**OSAP Fact Sheet**

**The Concept:**  
Founded in 1984 and formally incorporated as a non-profit organization in 1986, OSAP is dentistry's resource for infection control and occupational safety and health. The organization is comprised of dental practitioners, schools, consultants and industry representatives who share an interest in this important field.

**OSAP's Mission:**  
OSAP is dedicated to promoting infection control and related health and safety policies and practices supported by science and research. OSAP supports this commitment to healthcare workers and the public through quality education and information dissemination.

**OSAP's Purposes and Commitments:**

- Provide educational forums for dental healthcare professionals and the dental industry;
- Provide and monitor practical guidelines in infection control and safety;
- Interface with regulatory agencies and other organizations; and
- Promote quality research relating to infection control and safety issues.

For more information on OSAP, the OSAP Foundation, and available products and services, visit

[www.osap.org](http://www.osap.org)

Organization for Safety & Asepsis Procedures  
P.O. Box 6297 ♦ Annapolis, MD 21401  
1-800-298-OSAP (6727) ♦ 410-571-0003 ♦ FAX 0028  
Email: [office@osap.org](mailto:office@osap.org)



**OSAP NEWSLETTER  
Infection Control in Practice**



**INFECTION CONTROL IN PRACTICE**

- Immunology and Allergies April 2007
- The ABCs of Hepatitis February 2007
- A Visit from the Safety Inspector January 2007
- The Number One Infection Control Practice November 2006
- Managing Dental Office Waste October 2006
- Product Safety: Understanding the Regulation of Devices and Products for Dental Water Treatment August 2006
- Safety in More Than One Infection Control July 2006
- New Technology = Challenges in Asepsis May 2006
- Misses Are Your Allies? April 2006
- Hand Hygiene: Asepsis in Practice February 2006
- Safety and Infection Control Report Card January 2006
- All Eyes on You: The Patient's Perspective November 2005
- Pandemic Preparedness February 2005
- Ergonomics - Not Just Another Pain in the Neck October 2005
- Staying Healthy at Work August 2005
- Beyond the Bioscience in Infection Control July 2005
- Surface Disinfectants for Dentistry May 2005
- Setting up and Maintaining a Dental Office Safety Program April 2005
- New Radiation Safety Guidelines for the Dental Office February 2005
- New Instrument Reprocessing Technologies January 2005
- Infection Control for Oral Surgical Procedures October 2004
- Influence August 2004
- Sterilization Center Design July 2004
- Managing Environmental Surfaces April 2004
- Boiloff and Dental Unit Waterlines February 2004
- OSAP Check-Up: 2003 CDC Guidelines January 2004
- Infection Control and Dental Radiography November 2003
- Instrument Cleaning July 2003
- Medicine: Reprocessing August 2003
- Annual Infection Control & Safety Check-Up April 2003
- Personal Protective Equipment February 2003
- Hand Hygiene January 2003
- Device with Sharp Safety Features November 2002 Staff Training
- Demystifying Disinfectants August 2002
- Achieving OSHA Compliance, Rules and Regulations for the Dental Office July 2002
- Choosing Infection Control & Safety Products May/June 2002

**NEWSLETTER** OSAP  
DENTISTRY'S RESOURCE FOR INFECTION CONTROL & SAFETY

### ADA COMPLIANCE AIDS

www.adacatalog.org

### OBJECTIVES

- Satisfy the Core Elements of NY State Required Training in Infection Control and Obtain 4-Year Training Certificate
- Understand OSHA Standards & Requirements
- Understand CDC Recommendations
- How to Comply with Requirements in as Practical Way as Possible
- Provide a Safe Working & Treatment Environment

### NY State Core Element I

The responsibility to adhere to scientifically accepted principles and practices of infection control and to monitor the performance of those for whom the professional is responsible

### NY State Core Element II

Modes & mechanisms of transmission of pathogenic organisms in the healthcare setting and strategies for prevention and control

### NY State Core Element III



Use of engineering and work practice controls to reduce the opportunity for patient and healthcare worker contact with potentially infectious material or bloodborne pathogens



### NY State Core Element IV



Selection & use of barriers and/or personal protective equipment for preventing patient & healthcare worker contact with potentially infectious material



### NY State Core Element V



Creation & maintenance of a safe environment for patient care through application of infection control principles and practices for cleaning, disinfection and sterilization



### NY State Core Element VI



Prevention & management of infectious or communicable diseases in healthcare workers





Infection control training is mandated every four (4) years for dentists and dental hygienists licensed in New York State.



Failure to follow scientifically accepted infection control techniques is “unprofessional conduct” in New York State.



### Unprofessional Conduct



“Rules of the Board of Regents” section 29.2(a)(13)  
 Licensed dentists and dental hygienists must comply with the above rules and may be subject to disciplinary action if found in non-compliance by the Office of the Professions.

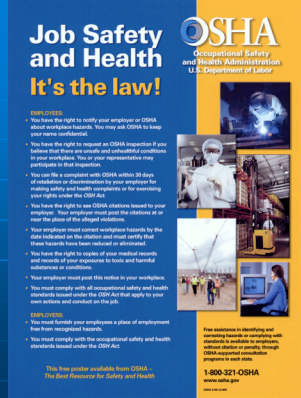
### OSHA STANDARDS

- Bloodborne Pathogens, 1991
- Hazard Communication Standard
- Others



## DISTINCTION

State law adds patient protections where OSHA regulations center on employee protections



**Job Safety and Health**  
**It's the law!**

**OSHA**  
Occupational Safety and Health Administration  
U.S. Department of Labor

**EMPLOYEES:**

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that you are working under unsafe or unhealthy conditions in your workplace. You or your representative may participate in that inspection.
- You can file a complaint with OSHA within 30 days of an incident or discovery by your supervisor for making safety and health complaints or for exercising your rights under the OSH Act.
- You have the right to see OSHA citations issued to your employer. The employer must post the citation at or near the place of the original violation.
- You are entitled to read and receive copies of the data indicated on the citation and must certify that these records have been received or destroyed.
- You have the right to copies of your medical records and/or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.
- You must comply with all occupational safety and health standards issued under the OSH Act that apply to your own activities and conduct on the job.

**EMPLOYERS:**

- You must furnish your employees a place of employment free from recognized hazards.
- You must comply with the occupational safety and health standards issued under the OSH Act.

This free poster is available from OSHA... The Best Resource for Safety and Health

The information on this poster is available in Spanish, Chinese, Vietnamese, and other languages. For more information, call 1-800-321-OSHA or visit www.osha-slc.gov

### OSHA Poster 3165

- [WWW.OSHA.GOV/PUBLICATIONS/POSTER](http://WWW.OSHA.GOV/PUBLICATIONS/POSTER)
- Or just "Google" "OSHA Poster" and you'll see a link to 3165 poster
- Replaces older versions as 2203 which DO NOT need to be replaced

### Infection Control Checklist as required by OSHA BB Pathogens Standard

- Exposure Control Plan and Other Written Documents
- Training of the Office Staff
- Hepatitis B Vaccination
- Postexposure Medical Evaluation & Follow-Up
- General Methods and Aseptic Techniques




### OSHA Checklist Continued (BB Pathogens)

- Protective Barriers
- Management of Regulated Waste
- Decontamination
- Instrument Processing
- Laboratory Asepsis
- Radiographic Asepsis
- Record Keeping




## Components of OSHA HazCom Standard

- Hazard Determination
- Written Hazard Communication Program
- Inventory & List Hazardous Chemicals
- Labels & Other Forms of Warning
- MSDS
- Employee Information & Training




## Guidelines for Infection Control in Dental Health-Care Settings 2003



**CDC. MMWR 2003;52(No. RR-17)**  
<http://www.cdc.gov/oralhealth/infectioncontrol/guidelines/index.htm>

**CDC**  
**MMWR**  
 Morbidity and Mortality Weekly Report  
 Recommendations and Reports December 19, 2003 / Vol. 52 / No. RR-17

**Guidelines for Infection Control in Dental Health-Care Settings — 2003**



**INSIDE: Continuing Education Examination**

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
 CENTERS FOR DISEASE CONTROL AND PREVENTION

### CDC GUIDELINES FOR INFECTION CONTROL IN DENTAL HEALTHCARE SETTINGS—2003

Vol. 52 / RR-17 Recommendations and Reports 1

**Guidelines for Infection Control in Dental Health-Care Settings — 2003**

Prepared by  
 William C. Kalkreuth, D.D.S.<sup>1</sup>  
 Amy S. Collins, M.P.H.<sup>1</sup>  
 Jennifer L. Cleveland, D.D.S.<sup>1</sup>  
 Jonathan A. Harte, D.D.S.<sup>1</sup>  
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 Division of Oral Health


National Center for Chronic Disease Prevention and Health Promotion, CDC  
 United States Air Force Dental Investigation Service  
 Great Lakes, Illinois  
 The Fenwick Institute  
 Boston, Massachusetts

**Summary**

*This report consolidates previous recommendations and adds new ones for infection control in dental settings. Recommendations are provided regarding 1) educating and protecting dental health-care personnel; 2) preventing transmission of bloodborne pathogens; 3) hand hygiene; 4) personal protective equipment; 5) contact dermatitis and latex hypersensitivity; 6) ventilation and disinfection of patient-care items; 7) environmental infection control; 8) dental unit waterlines, biofilm, and water quality; and 9) special considerations (e.g., dental handpieces and other devices, radiology personnel medications, oral surgical procedures, and dental laboratories). These recommendations were developed in collaboration with and after review by authorities on infection control from CDC and other public agencies, academia, and private and professional organizations.*


### SUMMARY CDC 2003 Recommendations

- Personnel Health Elements
- Prevention of Transmission of BB Pathogens
- Prevention of Exposures to Blood & Other Potentially Infectious Material
- Hand Hygiene
- PPE
- Contact Dermatitis & Latex Hypersensitivity




### CDC Recommendations Cont'd

- Sterilization & Disinfection of Patient Care Items
- Environmental Infection Control
- Dental Unit Waterlines (DUW), Biofilms, and Water Quality
- Boil-Water Notices
- Dental Handpieces & Other Devices Attached to Air & Water Lines

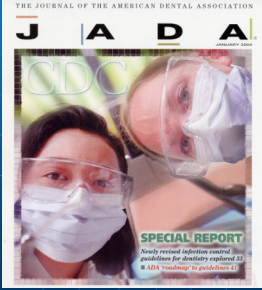


### CDC Recommendations Cont'd

- Dental Radiology
- Aseptic Technique for Parenteral Medications
- Single-Use (Disposable) Devices
- Oral Surgical Procedures
- Handling of Extracted Teeth
- Dental Lab
- TB
- Program Evaluation



### ALTERNATE SOURCE JADA January 2004



**GUIDELINES FOR INFECTION CONTROL IN DENTAL HEALTHCARE SETTINGS-2003**


"CDC believes that dental offices that follow these new recommendations will strengthen an already admirable record of safe dental practice"

## Infection Control in Dental Health-Care Settings: An Overview

- ◆ Background
- ◆ Personnel Health Elements
- ◆ Bloodborne Pathogens
- ◆ Hand Hygiene
- ◆ Personal Protective Equipment
- ◆ Latex Hypersensitivity/Contact Dermatitis
- ◆ Sterilization and Disinfection
- ◆ Environmental Infection Control
- ◆ Dental Unit Waterlines
- ◆ Special Considerations
- ◆ Program Evaluation

Guidelines for Infection Control in Dental Health-Care Settings—2003. *MMWR* 2003, Vol. 52, No. RR-17.

## Why Is Infection Control Important in Dentistry?

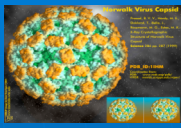


- Both patients and dental health care personnel (DHCP) can be exposed to pathogens
- Contact with blood, oral and respiratory secretions, and contaminated equipment occurs
- Proper procedures can prevent transmission of infections among patients and DHCP

## Modes of Transmission

- Direct contact with blood or body fluids
- Indirect contact with a contaminated instrument or surface
- Contact of mucosa of the eyes, nose, or mouth with droplets or spatter
- Inhalation of airborne microorganisms

## PATHOGENS



Pathogens are microorganisms that can cause disease in human




EXAMPLES:

- Virus: Hepatitis, HSV, HIV, Influenza
- Bacteria: Anthrax, Staph, Strep, ANUG, TB, Lyme Disease
- Fungi: Candidiasis, Ringworm



| Disease     | Risk Factors                                                                                                                                                                                                                                                                                                                                                           | Transmission                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HIV/AIDS    | <ul style="list-style-type: none"> <li>Sexual contact with an infected person</li> <li>Injecting drug use</li> <li>Infants born to infected mothers</li> <li>Breastfeeding infants of infected mothers</li> <li>Healthcare workers</li> </ul>                                                                                                                          | <ul style="list-style-type: none"> <li>Unprotected sexual contact</li> <li>Sharing needles by injecting drug users</li> <li>Accidental sharps injuries in health care</li> <li>Accidental mucous membrane splashes in health care</li> <li>From infected mother to baby during birth</li> </ul> |
| Hepatitis B | <ul style="list-style-type: none"> <li>Multiple sex partners</li> <li>Men who have sex with men</li> <li>Injecting drug users</li> <li>Household contacts of chronically infected persons</li> <li>Infants born to infected mothers</li> <li>Hemodialysis patients</li> <li>Health care and public safety workers</li> </ul>                                           | <ul style="list-style-type: none"> <li>Same as above, and</li> <li>Sharing personal hygiene items in a home setting</li> </ul>                                                                                                                                                                  |
| Hepatitis C | <ul style="list-style-type: none"> <li>Injecting drug users</li> <li>Household contacts of chronically infected persons</li> <li>Hemodialysis patients</li> <li>Recipients of clotting factors before 1987</li> <li>Recipients of blood and/or organs before 1992</li> <li>People with undiagnosed liver problems</li> <li>Infants born to infected mothers</li> </ul> | <ul style="list-style-type: none"> <li>Unprotected sexual contact</li> <li>Sharing needles by injecting drug users</li> <li>Accidental sharps injuries in health care</li> <li>Accidental mucous membrane splashes in health care</li> <li>From infected mother to baby during birth</li> </ul> |
| TB          | <ul style="list-style-type: none"> <li>Living with a person with active TB</li> <li>Residing in a long term care facility or homeless shelter</li> <li>Correctional facility inmates</li> <li>Infection with HIV disease</li> <li>Certain health conditions such as diabetes and cancer</li> </ul>                                                                     | <ul style="list-style-type: none"> <li>Breathing of droplet nuclei from a person with active infection when they cough, laugh, sing, or sneeze</li> </ul>                                                                                                                                       |
| Influenza   | <ul style="list-style-type: none"> <li>Close contact with an infected person</li> <li>Close contact with 1 day before they exhibit symptoms to 7 days after</li> </ul>                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Coughing</li> <li>Sneezing</li> <li>Touching contaminated surfaces</li> </ul>                                                                                                                                                                            |

OSAP Infection Control in Practice July 2005

# MRSA

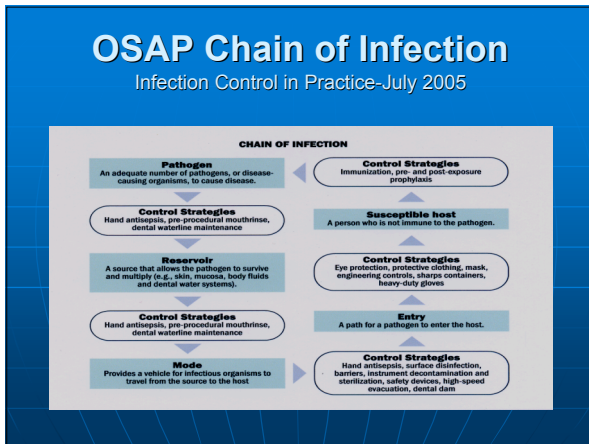
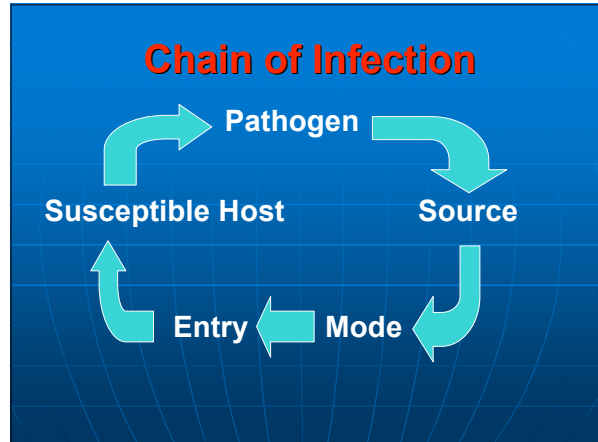
The main mode of transmission to other patients is through **human hands**, especially healthcare workers' hands. Hands may become contaminated with MRSA bacteria by contact with infected or colonized patients. If **appropriate hand hygiene** such as washing with soap and water or using an alcohol-based hand sanitizer is not performed, the bacteria can be spread when the healthcare worker touches other patients





Methicillin-resistant *Staphylococcus aureus* (MRSA) has become a prevalent nosocomial pathogen in the United States. In hospitals, the most important reservoirs of MRSA are infected or colonized patients. Although hospital personnel can serve as reservoirs for MRSA and may harbor the organism for many months, they have been more commonly identified as a link for transmission between colonized or infected patients. The main mode of transmission of MRSA is via hands (especially health care workers' hands) which may become contaminated by contact with a) colonized or infected patients, b) colonized or infected body sites of the personnel themselves, or c) devices, items, or environmental surfaces contaminated with body fluids containing MRSA. Standard Precautions, as described in the *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007*, should control the spread of MRSA in most instances. Additional measures to prevent the spread of MRSA are described in *Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006* PDF (234KB/74 pages)



- **Standard Precautions**
  - **1) Hand Hygiene**
  - Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items, whether or not gloves are worn. Perform hand hygiene immediately after gloves are removed, between patient contacts, and when otherwise indicated to avoid transfer of microorganisms to other patients or environments.
  - **2) Gloving**
  - Wear gloves (clean nonsterile gloves are adequate) when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, nonintact skin, or potentially contaminated intact skin (e.g., of a patient incontinent of stool or urine) could occur. Remove gloves after contact with a patient and/or the surrounding environment (including medical equipment) using proper technique to prevent hand contamination.
  - **3) Mouth, nose, eye protection**
  - Use PPE to protect the mucous membranes of the eyes, nose and mouth during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.
  - **4) Gowning**
  - Wear a gown, that is appropriate to the task, to protect skin and prevent soiling or contamination of clothing during procedures and patient-care activities when contact with blood, body fluids, secretions, or excretions is anticipated.
  - **5) Appropriate device handling of patient care equipment and instruments/devices**
  - Handle used patient-care equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of microorganisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed and that single-use items are properly discarded. Clean and disinfect surfaces that are likely to be contaminated with pathogens, including those that are in close proximity to the patient and frequently-touched surfaces in the patient care environment, on a more frequent schedule compared to that for other surfaces.
  - **6) Appropriate handling of laundry**
  - Handle, transport, and process used linen to avoid contamination of air, surfaces and persons.
- 



- 
- PORTALS OF EXIT**
- Coughing
  - Sneeze
  - Oral Draining Lesion
  - Draining Skin Lesion

## MODES OF TRANSMISSION

- Air
- Bloodborne
- Ingestion
- Direct Contact
- Indirect Contact

## Standard Precautions

- Apply to all patients
- Integrate and expand Universal Precautions to include organisms spread by blood and also
  - Body fluids, secretions, and excretions except sweat, whether or not they contain blood
  - Non-intact (broken) skin
  - Mucous membranes

## Elements of Standard Precautions

- Handwashing
- Use of gloves, masks, eye protection, and gowns
- Patient care equipment
- Environmental surfaces
- Injury prevention

## Personnel Health Elements



### Personnel Health Elements of an Infection Control Program

- Education and training
- Immunizations
- Exposure prevention and postexposure management
- Medical condition management and work-related illnesses and restrictions
- Health record maintenance

### IMMUNIZATIONS

- NY Public Health Law requires health workers with patient contact to be immunized for Measles and German Measles (Rubella)
- Additionally, annual Mantoux Tuberculin Skin Test is required for private office HCW (q6-months for health care facilities)



### TB

- Dental HC Provider with (+)TB Mantoux Test requires a Chest x-ray
- If (+), MD consult required for possible drug therapy
- If(-), repeat chest x-rays not needed

### Bloodborne Pathogens

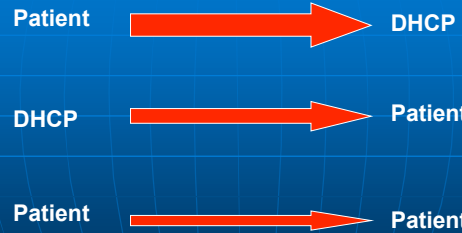


### Preventing Transmission of Bloodborne Pathogens

Bloodborne viruses such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV)

- Are transmissible in health care settings
- Can produce chronic infection
- Are often carried by persons unaware of their infection

### Potential Routes of Transmission of Bloodborne Pathogens



### Factors Influencing Occupational Risk of Bloodborne Virus Infection

- Frequency of infection among patients
- Risk of transmission after a blood exposure (i.e., type of virus)
- Type and frequency of blood contact

### Average Risk of Bloodborne Virus Transmission after Needlestick

| Source                                    | Risk                                                                          |
|-------------------------------------------|-------------------------------------------------------------------------------|
| HBV                                       |                                                                               |
| HBsAg <sup>+</sup> and HBeAg <sup>+</sup> | 22.0%-31.0% clinical hepatitis; 37%-62% serological evidence of HBV infection |
| HBsAg <sup>+</sup> and HBeAg <sup>-</sup> | 1.0%-6.0% clinical hepatitis; 23%-37% serological evidence of HBV infection   |
| HCV                                       | 1.8% (0%-7% range)                                                            |
| HIV                                       | 0.3% (0.2%-0.5% range)                                                        |

## PATIENT-TO-PATIENT Hepatitis-B Transmission

The Journal of Infectious Diseases 2007;195:1311-1314  
© 2007 by the Infectious Diseases Society of America. All rights reserved.  
DOI: 10.1093/infdis/jin128

**BRIEF REPORT**

**Patient-to-Patient Transmission of Hepatitis B Virus Associated with Oral Surgery**

John T. Auck,<sup>1</sup> Joan Baumback,<sup>2</sup> William Kahn,<sup>2</sup> Dennis Nelson,<sup>3</sup> Marina Plotnikova,<sup>4</sup> and Ian Williams<sup>2</sup>

<sup>1</sup>Systemic Infection Service and Division of Oral Health and <sup>2</sup>Viral Hepatitis, Centers for Disease Control and Prevention, Atlanta, Georgia; <sup>3</sup>Office of Epidemiology, New Mexico Department of Health, Santa Fe

(See the editorial commentary by [Smith et al.](#), on pages 1329-41, and [Alikou and Schaffner](#), on pages 1346-7, and the major article by [Buck et al.](#), on pages 1295-4)

We used molecular epidemiologic techniques to document patient-to-patient transmission of hepatitis B virus (HBV) between 2 separate oral surgery patients separated on 191 and 192 days apart. Serological testing of 221 (91%) of 237 patients operated on after the source patient revealed that 19 (7%) of 22 were previously immune to HBV; no additional cases were identified. We found no differences in infection control practices. Transmission may have been limited to the high prevalence (67%) of plasma neutralized against HBV. To our knowledge, this is the first documented case of patient-to-patient transmission of a bloodborne pathogen in a dental setting in the United States.

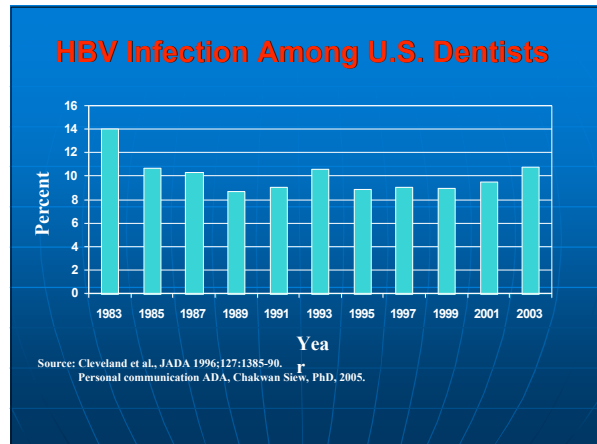
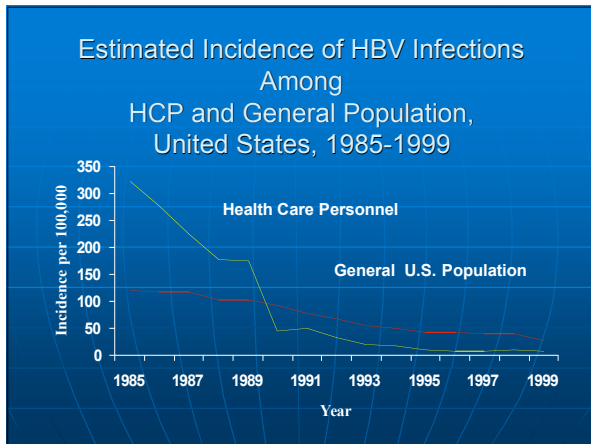
- **Journal of Infectious Diseases**
- 2007;195:1311-1314
- (21 March, 2007)
- 2 multiple-Exo Pts. Treated 161 min. apart

## Concentration of HBV in Body Fluids

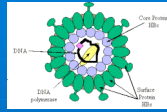
High ← Moderate → Low/None

|                |               |             |
|----------------|---------------|-------------|
| Blood          | Semen         | Urine       |
| Serum          | Vaginal Fluid | Feces       |
| Wound exudates | Saliva        | Sweat       |
|                |               | Tears       |
|                |               | Breast Milk |

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR DISEASE CONTROL AND PREVENTION



## Hepatitis B Vaccine



- ◆ Vaccinate all DHCP who are at risk of exposure to blood (must offer within 10 days of initial assignment at no cost)
- ◆ Provide access to qualified health care professionals for administration and follow-up testing
- ◆ Test for anti-HBs 1 to 2 months after 3rd dose

## DECLINATION

Employees refusing Hepatitis B vaccination must sign a declination form

Employee must still be provided vaccination at no cost if decide in future that they want it after declination



## HEP B VACCINE Declination Form

OSHA Bloodborne Pathogens Standard (29CFR 1910.1030) Hepatitis B Vaccine Declination

I understand that due to my occupational exposure to blood and other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee signature \_\_\_\_\_ Date \_\_\_\_\_  
 Witness signature \_\_\_\_\_ Date \_\_\_\_\_

## Transmission of HBV from Infected DHCP to Patients

- Nine clusters of transmission from dentists and oral surgeons to patients, 1970–1987
- Eight dentists tested for HBeAg were positive
- Lack of documented transmissions since 1987 may reflect increased use of gloves and vaccine
- One case of patient-to-patient transmission, 2003



### Occupational Risk of HCV Transmission among HCP

- Inefficiently transmitted by occupational exposures
- Three reports of transmission from blood splash to the eye
- Report of simultaneous transmission of HIV and HCV after non-intact skin exposure

### HCV Infection in Dental Health Care Settings

- Prevalence of HCV infection among dentists similar to that of general population (~ 1%-2%)
- No reports of HCV transmission from infected DHCP to patients or from patient to patient
- Risk of HCV transmission appears very low

### Transmission of HIV from Infected Dentists to Patients



- Only one documented case of HIV transmission from an infected dentist to patients
- No transmissions documented in the investigation of 63 HIV-infected HCP (including 33 dentists or dental students)

### Health Care Workers with Documented and Possible Occupationally Acquired HIV/AIDS

CDC Database as of December 2002

|                        | Documented | Possible   |
|------------------------|------------|------------|
| Dental Worker          | 0          | 6 *        |
| Nurse                  | 24         | 35         |
| Lab Tech, clinical     | 16         | 17         |
| Physician, nonsurgical | 6          | 12         |
| Lab Tech, nonclinical  | 3          | —          |
| Other                  | 8          | 69         |
| <b>Total</b>           | <b>57</b>  | <b>139</b> |

\* 3 dentists, 1 oral surgeon, 2 dental assistants

**Risk Factors for HIV Transmission after Percutaneous Exposure to HIV-Infected Blood**  
**CDC Case-Control Study**



- Deep injury
- Visible blood on device
- Needle placed in artery or vein
- Terminal illness in source patient

Source: Cardo, et al., *N England J Medicine* 1997;337:1485-90.

**Characteristics of Percutaneous Injuries Among DHCP**

- Reported frequency among general dentists has declined
- Caused by burs, syringe needles, other sharps
- Occur outside the patient's mouth
- Involve small amounts of blood
- Among oral surgeons, occur more frequently during fracture reductions and procedures involving wire

**Exposure Prevention Strategies**

- Engineering controls
- Work practice controls
- Administrative controls

**Engineering Controls**

- Isolate or remove the hazard
- Examples:
  - Sharps container
  - Medical devices with injury protection features (e.g., self-sheathing needles)



### Work Practice Controls

- ◆ Change the manner of performing tasks
- ◆ Examples include:
  - Using instruments instead of fingers to retract or palpate tissue
  - One-handed needle recapping

### Administrative Controls

- Policies, procedures, and enforcement measures
- Placement in the hierarchy varies by the problem being addressed
  - Placed before engineering controls for airborne precautions (e.g., TB)

### OSHA BB PATHOGENS STANDARD Compliance Steps



- Review the Standard
- Prepare Written Exposure Control Plan
- Train Employees
- Maintain Records
- Provide Employees for Compliance:
  - Hep B Vaccination
  - PPE & Engineering Controls
  - Establish Work Practices & Decontamination Procedures
  - Post Exposure Plan
  - Provide Biohazard Communication


### EXPOSURE CONTROL PLAN

- OSHA requires exposure determination by employee position (High v. Low Risk)
- The Plan is available to employees and OSHA
- Plan includes documented annual (and new employee) training




### WRITTEN EXPOSURE CONTROL PLAN

- Exposure Determination/Who is Covered
- Schedule of Implementation (How/When)
  - Communication of Hazards to Employees
  - Hep B Vaccination
  - Post Exposure Evaluation & Follow Up
  - Record Keeping
- Methods of Compliance (Engineering, Work Practice Controls, PPE, Housekeeping)



### EXP CONTROL PLAN (cont'd)

- Evaluation of Exposure Incidents
- Prevention of Sharps Injuries
  - Describe how newer devices that may reduce exposure will be ID'd and considered for use
  - Describe methods to evaluate the devices & results of the evaluations
  - Describe justification as to why/why not a device is selected for use
  - Describe how those directly involved in patient care are involved in this ID, evaluation & selection process



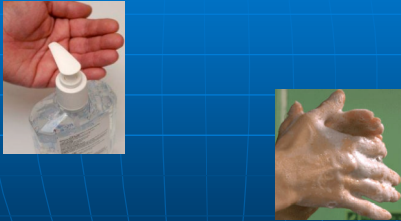
### Post-exposure Management Program

- Clear policies and procedures
- Education of dental health care personnel (DHCP)
- Rapid access to
  - Clinical care
  - Post-exposure prophylaxis (PEP)
  - Testing of source patients/HCP


### Post-exposure Management

- Wound management
- Exposure reporting
- Assessment of infection risk
  - Type and severity of exposure
  - Bloodborne status of source person
  - Susceptibility of exposed person

# Hand Hygiene



## “Hand Hygiene” is Catching On



**Clean Hands  
Stop the Spread  
of Germs**

**Cleveland Clinic**

**To Our Visitors:**

Welcome to Cleveland Clinic. During your stay, we ask for your help in keeping our patients safe. Please take a few minutes to learn how you can help prevent the spread of infection in the hospital.

**1. Wash your hands.** Clean hands are the best protection against infection. You should always wash your hands with soap and water for 15 seconds.

- before and after eating
- when your hands are visibly dirty
- when entering and leaving a patient's room

Waterless hand sanitizers can be used before and after eating or when entering and leaving a patient's room, but should never be used after using the restroom or when your hands are visibly dirty.

**2. Cover your mouth and nose with a tissue when you sneeze or cough.** Dispose of the used tissue immediately and clean your hands. If you do not have a tissue, use the upper part of your elbow to cover your cough or sneeze. If you have a cold or flu, or if you are not feeling well, it may be best to stay home. Please advise relatives or friends who are not feeling well to avoid visiting, if possible, until they are well.

Thank you for your assistance in keeping our patients safe.  
med.care@ccc.org

## ...and On




## Why Is Hand Hygiene Important?

- Hands are the most common mode of pathogen transmission
- Reduce spread of antimicrobial resistance
- Prevent health care-associated infections


**DIRTY  
HANDS  
SPREAD DISEASE  
WASH  
THEM**

For Public Health



### Hands Need to be Cleaned When

- Visibly dirty
- After touching contaminated objects with bare hands
- Before and after patient treatment (before glove placement and after glove removal)



### Hand Hygiene Definitions

- Handwashing
  - Washing hands with plain soap and water
- Antiseptic handwash
  - Washing hands with water and soap or other detergents containing an antiseptic agent
- Alcohol-based handrub
  - Rubbing hands with an alcohol-containing preparation
- Surgical antisepsis
  - Handwashing with an antiseptic soap or an alcohol-based handrub before operations by surgical personnel

### Efficacy of Hand Hygiene Preparations in Reduction of Bacteria

|            |                    |                       |
|------------|--------------------|-----------------------|
| Good       | Better             | Best                  |
| ←————→     |                    |                       |
| Plain Soap | Antimicrobial soap | Alcohol-based handrub |

Source: <http://www.cdc.gov/handhygiene/materials.htm>

### Alcohol-based Preparations

|                                                                                                                                                                                              |                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Benefits</b></p> <ul style="list-style-type: none"> <li>■ Rapid and effective antimicrobial action</li> <li>■ Improved skin condition</li> <li>■ More accessible than sinks</li> </ul> | <p><b>Limitations</b></p> <ul style="list-style-type: none"> <li>■ Cannot be used if hands are visibly soiled</li> <li>■ Store away from high temperatures or flames</li> <li>■ Hand softeners and glove powders may "build-up"</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





## Special Hand Hygiene Considerations

- Use hand lotions to prevent skin dryness
- Consider compatibility of hand care products with gloves (e.g., mineral oils and petroleum bases may cause early glove failure)
- Keep fingernails short
- Avoid artificial nails
- Avoid hand jewelry that may tear gloves

## Personal Protective Equipment



## PERSONAL PROTECTIVE EQUIPMENT

- A major component of Standard Precautions
- Protects the skin and mucous membranes from exposure to infectious materials in spray or spatter
- Should be removed when leaving treatment areas
- No cost to employee

## Masks, Protective Eyewear, Face Shields

- Wear a surgical mask and either eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth
- Change masks between patients
- Clean reusable face protection between patients; if visibly soiled, clean and disinfect

## Protective Clothing

- Wear gowns, lab coats, or uniforms that cover skin and personal clothing likely to become soiled with blood, saliva, or infectious material
- Change if visibly soiled
- Remove all barriers before leaving the work area



## Gloves



- Minimize the risk of health care personnel acquiring infections from patients
- Prevent microbial flora from being transmitted from health care personnel to patients
- Reduce contamination of the hands of health care personnel by microbial flora that can be transmitted from one patient to another
- Are not a substitute for handwashing!

## Recommendations for Gloving

- Wear gloves when contact with blood, saliva, and mucous membranes is possible
- Remove gloves after patient care
- Wear a new pair of gloves for each patient



## Recommendations for Gloving

Remove gloves that are torn, cut or punctured



Do not wash, disinfect or sterilize gloves for reuse

## Latex Hypersensitivity and Contact Dermatitis

### Latex Allergy

- Type I hypersensitivity to natural rubber latex proteins
- Reactions may include nose, eye, and skin reactions
- More serious reactions may include respiratory distress—rarely shock or death



### Contact Dermatitis

- Irritant contact dermatitis
  - Not an allergy
  - Dry, itchy, irritated areas
- Allergic contact dermatitis
  - Type IV delayed hypersensitivity
  - May result from allergy to chemicals used in glove manufacturing

### General Recommendations Contact Dermatitis and Latex Allergy

- Educate DHCP about reactions associated with frequent hand hygiene and glove use
- Get a medical diagnosis
- Screen patients for latex allergy
- Ensure a latex-safe environment
- Have latex-free kits available (dental and emergency)

## JADA April 2005 Curtis Hamann, MD, et al

| CHARACTERISTIC                                     | TYPE OF OCCUPATION-RELATED ALLERGY OR DERMATITIS                                                                                                                 |                                                                                                                                    |                                                                                             |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|                                                    | Type I (Immediate Allergy to NRE)                                                                                                                                | Type IV (Delayed Allergy or Allergic Contact Dermatitis)                                                                           | Contact Dermatitis (Irritant)                                                               |
| <b>Immune System Involvement</b>                   | Immunologic hypersensitivity to microbial antigens                                                                                                               | Lymphoid T-cell mediated                                                                                                           | Lymphoid inflammation, often via immunization                                               |
| <b>Location of Reaction</b>                        | Over entire body, owing to circulating antibodies                                                                                                                | On skin directly contacted to allergen agent                                                                                       | On skin contacted to contact agent                                                          |
| <b>Source of Allergen or Irritant to Dentistry</b> | Plant-based proteins in NRE, penicillin                                                                                                                          | Chemicals such as natural latex rubber, nickel, platinum, gold, dental cements, dental composites, dental resins, dental adhesives | Allopathic drugs or allopathic medications, dental cements, dental resins, dental adhesives |
| <b>Potential Risk Factors</b>                      | History of allergic reaction to foods, respiratory, allergic rhinitis, hay fever, and conjunctivitis, as well as to surgical gloves, latex and dental anesthetic | History of allergic reaction, skin rashes, eczema or dermatitis                                                                    | History of allergic reaction, eczema, eczema, eczema or dermatitis                          |
| <b>Exposures</b>                                   | History of allergic reaction to foods, respiratory, allergic rhinitis, hay fever, and conjunctivitis, as well as to surgical gloves, latex and dental anesthetic | History of allergic reaction, skin rashes, eczema or dermatitis                                                                    | History of allergic reaction, eczema, eczema, eczema or dermatitis                          |
| <b>Inhibition of symptoms</b>                      | Within minutes or hours of contact                                                                                                                               | Within hours or days of contact                                                                                                    | Within minutes or hours of contact                                                          |
| <b>Resolution of symptoms</b>                      | After a few hours of contact                                                                                                                                     | After a few weeks of contact                                                                                                       | After a few days of contact                                                                 |
| <b>Exposures</b>                                   | History of allergic reaction to foods, respiratory, allergic rhinitis, hay fever, and conjunctivitis, as well as to surgical gloves, latex and dental anesthetic | History of allergic reaction, skin rashes, eczema or dermatitis                                                                    | History of allergic reaction, eczema, eczema, eczema or dermatitis                          |

OCCUPATIONAL ALLERGIES IN DENTISTRY  
pp.500-510

## Hamann, et al JADA 4/2005

Skin Testing:  
"Prick"/  
Type I  
v.  
"Patch"/  
Type IV

**Evaluate Medical History for Risk Factors**

- Existing allergic conditions, including contact allergies or eczema
- Surgical or multiple surgeries
- Prior allergic reactions to rubber
- Exposure history

Document all symptoms (such as skin rash, itching, asthma, itchy eyes, runny nose, bleed)

**Test for Type I NRE Protein Allergy**

Skin prick test: Sensitive and specific, but has commercial test standards

**Serologic testing:** Convenient, but not as sensitive or specific; false negatives, and positive possible

**Test for ACD Resulting From Exposure to Chemical Allergens**

Patch testing with common dental allergens: Early accurate, but can be inconclusive; requires experienced, trained dermatologist or allergist to conduct it

**Positive Test:** Avoid NRE-containing products

**Negative Test:** Consider additional testing, depending on history and symptoms

**Positive Test:** Avoid chemical allergens

Figure 1. Diagnostic algorithm for occupational allergies in dentistry. NRE, Natural rubber latex; ACD, Allergic contact dermatitis.

## Sterilization and Disinfection of Patient Care Items





## Critical Instruments

- Penetrate mucous membranes or contact bone, the bloodstream, or other normally sterile tissues (of the mouth)
- Heat sterilize between uses or use sterile single-use, disposable devices
- Examples include surgical instruments, scalpel blades, periodontal scalers, and surgical dental burs

## Semi-critical Instruments

- Contact mucous membranes but do not penetrate soft tissue
- Heat sterilize or high-level disinfect
- Examples: Dental mouth mirrors, amalgam condensers, and dental handpieces

## Noncritical Instruments and Devices

- Contact intact skin
- Clean and disinfect using a low to intermediate level disinfectant
- Examples: X-ray heads, facebows, pulse oximeter, blood pressure cuff

## Instrument Processing Area

- Use a designated processing area to control quality and ensure safety
- Divide processing area into work areas
  - Receiving, cleaning, and decontamination
  - Preparation and packaging
  - Sterilization
  - Storage

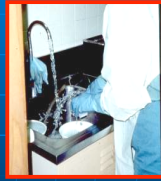
## Automated Cleaning

- Ultrasonic cleaner
- Instrument washer
- Washer-disinfector



## Manual Cleaning

- Soak until ready to clean
- Wear heavy-duty utility gloves, mask, eyewear, and protective clothing



## Preparation and Packaging

- Critical and semi-critical items that will be stored should be wrapped or placed in containers before heat sterilization
- Hinged instruments opened and unlocked
- Place a chemical indicator inside the pack
- Wear heavy-duty, puncture-resistant utility gloves

## Heat-Based Sterilization

- Steam under pressure (autoclaving)
  - Gravity displacement
  - Pre-vacuum
- Dry heat
- Unsaturated chemical vapor

## Liquid Chemical Sterilant/Disinfectants

- Only for heat-sensitive critical and semi-critical devices
- Powerful, toxic chemicals raise safety concerns
- Heat tolerant or disposable alternatives are available





## Sterilization Monitoring Types of Indicators



- Mechanical
  - Measure time, temperature, pressure
- Chemical
  - Change in color when physical parameter is reached
- Biological (spore tests)
  - Use biological spores to assess the sterilization process directly

## Storage of Sterile and Clean Items and Supplies

- Use date- or event-related shelf-life practices
- Examine wrapped items carefully prior to use
- When packaging of sterile items is damaged, re-clean, re-wrap, and re-sterilize
- Store clean items in dry, closed, or covered containment

## Environmental Infection Control

## Environmental Surfaces

- May become contaminated
- Not directly involved in infectious disease transmission
- Do not require as stringent decontamination procedures

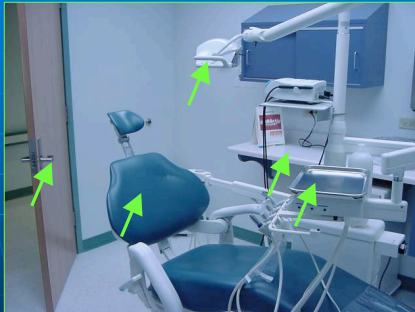
## Categories of Environmental Surfaces

- Clinical contact surfaces
  - High potential for direct contamination from spray or spatter or by contact with DHCP's gloved hand
- Housekeeping surfaces
  - Do not come into contact with patients or devices
  - Limited risk of disease transmission

### OSAP Surface Disinfectant Reference Chart - 2005

| PROJECT CLASSIFICATION | Manufacturer or Label | Brand / Package Size | EPA Number | Efficacy | DBP | OSAP 601 |     |     | Spectrum | EPA Use | Manufacturer or Supplier |
|------------------------|-----------------------|----------------------|------------|----------|-----|----------|-----|-----|----------|---------|--------------------------|
|                        |                       |                      |            |          |     | 100      | 200 | 300 |          |         |                          |
| Dental Unit            | Hygiene-100           | 1000-1000            | 4001-1     | 1        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-200           | 1000-2000            | 4001-2     | 2        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-300           | 1000-3000            | 4001-3     | 3        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
| Patient Room           | Hygiene-100           | 1000-1000            | 4001-1     | 1        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-200           | 1000-2000            | 4001-2     | 2        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-300           | 1000-3000            | 4001-3     | 3        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
| Housekeeping           | Hygiene-100           | 1000-1000            | 4001-1     | 1        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-200           | 1000-2000            | 4001-2     | 2        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |
|                        | Hygiene-300           | 1000-3000            | 4001-3     | 3        | 100 | 100      | 100 | 100 | 100      | 100     | 100                      |

## Clinical Contact Surfaces



## Housekeeping Surfaces



### Intermediate Level Disinfectants



QUAT+ALCOHOL



PHENOL

### General Cleaning Recommendations


- Use barrier precautions (e.g., heavy-duty utility gloves, masks, protective eyewear) when cleaning and disinfecting environmental surfaces
- Physical removal of microorganisms by cleaning is as important as the disinfection process
- Follow manufacturer's instructions for proper use of EPA-registered hospital disinfectants
- Do not use sterilant/high-level disinfectants on environmental surfaces

### Cleaning Clinical Contact Surfaces

- Risk of transmitting infections greater than for housekeeping surfaces
- Surface barriers can be used and changed between patients

**OR**

- Clean then disinfect using an EPA-registered low- (HIV/HBV claim) to intermediate-level (tuberculocidal claim) hospital disinfectant



### Cleaning Housekeeping Surfaces

- Routinely clean with soap and water or an EPA-registered detergent/hospital disinfectant routinely
- Clean mops and cloths and allow to dry thoroughly before re-using
- Prepare fresh cleaning and disinfecting solutions daily and per manufacturer recommendations

## FOOD & DRINK

Eating, Drinking, Application of Make-up & Handling of Contact Lenses is Prohibited in areas where there is a reasonable likelihood of Occupational Exposure



## Medical Waste

- Medical Waste: Not considered infectious, thus can be discarded in regular trash
- Regulated Medical Waste: Poses a potential risk of infection during handling and disposal

## REGULATED WASTE

- Liquid or Semi-Liquid Blood or OPIM
- Contaminated Items that would Release Blood or OPIM if Compressed
- Items Caked with Dried Blood/OPIM
- Contaminated Sharps
- Extracted Teeth/Tissues



## Regulated Medical Waste Management

- Properly labeled containment to prevent injuries and leakage
- Medical wastes are "treated" in accordance with state and local EPA regulations
- Processes for regulated waste include autoclaving and incineration



## NY STATE REGULATIONS

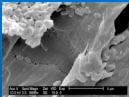

- Disposal of Regulated Medical Waste Sharps
- 6NYCRR Parts 360 & 364 and 10NYCRR Part 70
  - NYS DEC
  - [www.dec.state.ny.us/website/dshm/regs/dshm97004.htm](http://www.dec.state.ny.us/website/dshm/regs/dshm97004.htm)
  - Contact an EPA Hazardous Waste Hauler



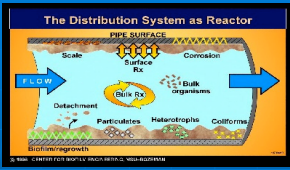
## Dental Unit Waterlines, Biofilm, and Water Quality

## Dental Unit Waterlines and Biofilm

- Microbial biofilms form in small bore tubing of dental units
- Biofilms serve as a microbial reservoir
- Primary source of microorganisms is municipal water supply

## BIOFILM



|                                          |                                                 |                                           |                                                       |                                                        |
|------------------------------------------|-------------------------------------------------|-------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|
| REVERSIBLE ADSORPTION OF BACTERIA (sec.) | IRREVERSIBLE ATTACHMENT OF BACTERIA (sec.-min.) | GROWTH & DIVISION OF BACTERIA (hrs.-days) | EXOPOLYMER PRODUCTION & BIOFILM FORMATION (hrs.-days) | ATTACHMENT OF OTHER ORGANISMS TO BIOFILM (days-months) |
|------------------------------------------|-------------------------------------------------|-------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|

## Dental Unit Water Quality



- Using water of uncertain quality is inconsistent with infection control principles
- Colony counts in water from untreated systems can exceed 1,000,000 CFU/mL  
CFU=colony forming unit
- Untreated dental units cannot reliably produce water that meets drinking water standards

## Dental Water Quality

For routine dental treatment, meet regulatory standards for drinking water.\*



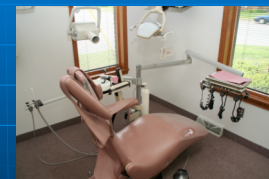
\* <500 CFU/mL of heterotrophic water bacteria



## Available DUWL Technology



- Independent reservoirs
- Chemical treatment
- Filtration
- Combinations
- Sterile water delivery systems





## Monitoring Options



- Water testing laboratory
- In-office testing with self-contained kits
- Follow recommendations provided by the manufacturer of the dental unit or waterline treatment product for monitoring water quality

## DENTAL UNIT WATERLINES

JADA, Jan. '04 p.46

### Cleaning dental unit waterlines

**A** major addition to the new Centers for Disease Control and Prevention (CDC) clinical guidelines for dental health care workers addresses the specific water delivery system in dental practices. The new clinical guideline states that dental unit water systems should use sterile drinking water, repeatedly treated with a disinfectant, such as chlorine dioxide and hydrogen peroxide. The guideline states that the water entering dental unit waterlines should be treated with a disinfectant, such as chlorine dioxide, before it enters the dental unit. The guideline also states that the water entering dental unit waterlines should be treated with a disinfectant, such as chlorine dioxide, before it enters the dental unit. The guideline also states that the water entering dental unit waterlines should be treated with a disinfectant, such as chlorine dioxide, before it enters the dental unit.

the pH of air (such as between the waterline and the dental instrument) to block the passage of microorganisms. Filters will have either an ultra-fine or a medium-fine filter to remove particulate matter. Filters must be replaced periodically and frequently inspected for the amount of buildup in the waterline. Filters may or may not remove endotoxins. Endotoxins in part of the water line of the wall of the waterline may be removed by the use of chlorine dioxide. Endotoxins that are resistant to the disinfectant may be removed by the use of chlorine dioxide. Endotoxins that are resistant to the disinfectant may be removed by the use of chlorine dioxide. Endotoxins that are resistant to the disinfectant may be removed by the use of chlorine dioxide.

## Sterile Irrigating Solutions

- Use sterile saline or sterile water as a coolant/irrigator when performing surgical procedures
- Use devices designed for the delivery of sterile irrigating fluids



## Special Considerations

- Dental handpieces and other devices attached to air and waterlines
- Dental radiology
- Aseptic technique for parenteral medications
- Single-use (disposable) Devices
- Preprocedural mouth rinses
- Oral surgical procedures
- Handling biopsy specimens
- Handling extracted teeth
- Laser/electrosurgery plumes or surgical smoke
- Dental laboratory
- *Mycobacterium tuberculosis*
- Creutzfeldt-Jacob Disease (CJD) and other prion-related diseases



### Dental Handpieces and Other Devices Attached to Air and Waterlines



- Clean and heat sterilize intraoral devices that can be removed from air and waterlines
- Follow manufacturer's instructions for cleaning, lubrication, and sterilization
- Do not use liquid germicides or ethylene oxide

### Components of Devices Permanently Attached to Air and Waterlines

- Do not enter patient's mouth but may become contaminated
- Use barriers and change between uses
- Clean and intermediate-level disinfect the surface of devices if visibly contaminated

### Saliva Ejectors

- Previously suctioned fluids might be retracted into the patient's mouth when a seal is created
- Do not advise patients to close their lips tightly around the tip of the saliva ejector



### Dental Radiology

- Wear gloves and other appropriate personal protective equipment as necessary
- Heat sterilize heat-tolerant radiographic accessories
- Transport and handle exposed radiographs so that they will not become contaminated
- Avoid contamination of developing equipment



## RADIOLOGY

- Exposed films dried with gauze or paper towel before transport to processing area
- Equipment protected with surface barriers and changed for each patient
- Surfaces unable to be wrapped are cleaned and disinfected after each patient

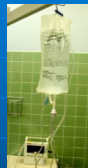


## Parenteral Medications

- Definition: Medications that are injected into the body
- Cases of disease transmission have been reported
- Handle safely to prevent transmission of infections

## Precautions for Parenteral Medications

- IV tubings, bags, connections, needles, and syringes are single-use, disposable
- Single dose vials
  - Do not administer to multiple patients even if the needle on the syringe is changed
  - Do not combine leftover contents for later use



## Single-Use (Disposable) Devices

- Intended for use on one patient during a single procedure
- Usually not heat-tolerant
- Cannot be reliably cleaned
- Examples: Syringe needles, prophylaxis cups, and plastic orthodontic brackets

### Preprocedural Mouth Rinses

- Antimicrobial mouth rinses prior to a dental procedure
  - Reduce number of microorganisms in aerosols/spatter
  - Decrease the number of microorganisms introduced into the bloodstream
- Unresolved issue—no evidence that infections are prevented

### Oral Surgical Procedures

- Present a risk for microorganisms to enter the body
- Involve the incision, excision, or reflection of tissue that exposes normally sterile areas of the oral cavity
- Examples:
  - Biopsy
  - Perio surgery
  - Implant surgery
  - Apical surgery
  - Surgical extractions



### Precautions for Surgical Procedures

Surgical Scrub



Sterile Irrigating Solutions



Sterile Surgeon's Gloves



### Handling Biopsy Specimens

- Place biopsy in sturdy, leakproof container
- Avoid contaminating the outside of the container
- Label with a biohazard symbol



## Extracted Teeth

- Considered regulated medical waste
  - Do not incinerate extracted teeth containing amalgam
  - Clean and disinfect before sending to lab for shade comparison
- Can be given back to patient




## MANAGING Hg in NEW YORK

- NYSDA NEWS Winter 2003 Volume 16 #4

## MANAGING Hg in NEW YORK

## NY AMALGAM RECYCLING



**DOING OUR PART**  
We collect, manage, and recycle all amalgams so as to protect the public and the environment.

**WE WILL NEVER**  
Allow scrap amalgam down the drain.

**WE WILL ALWAYS**  
Use only pre-encapsulated alloy restorations all elemental mercury from our office.

- Collect and recycle ALL amalgam waste in the building.
- Used amalgam capsules.
- Extracted teeth containing amalgam (disinfected first).
- Disposable amalgam trays and contaminated reusable trays.
- Used vacuum pump filters.
- Waste amalgam shaker from amalgam separator filters.
- Install and maintain appropriate amalgam separator.

Keep all records showing proof of mercury and amalgam waste recycling.  
Collect and recycle previously sorted mercury and amalgam shaker when replacing or repairing plumbing.


**It's the law in New York State, and it's the right thing to do!**

- [www.dec.state.ny.us](http://www.dec.state.ny.us)
- Click on "Subject Index" at top of page
- Scroll down to letter "D" and Click on "Dental Mercury Amalgam Recycling"

## www.dec.ny.gov/chemical

- List of Mercury and Dental Amalgam Recyclers & Hazardous Waste Haulers
- **Dental Amalgam Recycling Vendors**
- Advanced Environmental Recycling Corporation (AERC)  
Amalgaway Mail Disposal Service  
Bethlehem Apparatus Company  
Doral Refining Corporation  
Dental Recycling of North America (DRNA)  
Enviro-Chem, Inc.  
Maguire and Strickland Refining Company  
Mercury Waste Solutions, Inc.  
Metasys (Pure Water Development L.L.C.)  
Safety-Kleen  
Veolia Environmental Services (formerly Superior Special Services and Onyx are also offered.  
WCM, Inc. (Waste & Compliance Management)
- **Amalgam Separator Manufacturers**
- See the [list of amalgam separator manufacturers](#)
- **Hazardous Waste Haulers**
- All of the following haulers will accept elemental mercury for recycling. **Clean Harbors Environmental Services, Inc.**  
**Environmental Products and Services**  
**Heritage Environmental Services**  
**Triumvirate Environmental, Inc.**

## AMALGAM SEPARATORS



- **JADA August 2003**  
pp.1054-1065  
Purchasing, Installing and Operating Dental Amalgam Separators. McManus, et al.
- **JADA July 2006**  
pp.999-1005  
Evaluating Amalgam Separators Using an International Standard. Batchu, et al.

## Handling Extracted Teeth in Educational Settings

- Remove visible blood and debris
- Maintain hydration
- Autoclave (teeth with no amalgam)
- Use Standard Precautions

### Laser/Electrosurgery Plumes and Surgical Smoke

- Destruction of tissue creates smoke that may contain harmful by-products
- Infectious materials (HSV, HPV) may contact mucous membranes of nose
- No evidence of HIV/HBV transmission
- Need further studies
- CDC has NOT made specific recommendations

### Dental Laboratory

- Dental prostheses, appliances, and items used in their making are potential sources of contamination
- Handle in a manner that protects patients and DHCP from exposure to microorganisms



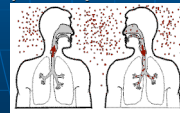
### Dental Laboratory

- Clean and disinfect prostheses and impressions
- Wear appropriate PPE until disinfection has been completed
- Clean and heat sterilize heat-tolerant items used in the mouth
- Communicate specific information about disinfection procedures



### Transmission of *Mycobacterium tuberculosis*

- Spread by droplet nuclei (airborne)
- Highly contagious
- Immune system usually prevents spread (10% infected develop TB)
- Bacteria can remain alive in the lungs for many years (latent TB infection)





## Risk of TB Transmission in Dentistry

- Risk in dental settings is low
- Only one documented case of transmission
- Tuberculin skin test conversions among DHP are rare

## Preventing Transmission of TB in Dental Settings

- Assess patients for history of TB
- Defer elective dental treatment
- If patient must be treated:
  - DHCP should wear N-95 face mask
  - Separate patient from others/mask/tissue
  - Refer to facility with proper TB infection control precautions



## Creutzfeldt-Jakob Disease (CJD) and other Prion Diseases

- A type of a fatal degenerative disease of central nervous system
- Caused by abnormal "prion" protein
- Human and animal forms
- Long incubation period
- One case per million population worldwide

## New Variant CJD (vCJD)

- Variant CJD (vCJD) is the human version of Bovine Spongiform Encephalopathy (BSE)
- Case reports in the UK, Italy, France, Ireland, Hong Kong, Canada
- One case report in the United States – former UK resident



### Infection Control for Known CJD or vCJD Dental Patients

- Use single-use disposable items and equipment
- Consider items difficult to clean (e.g., endodontic files, broaches) as single-use disposable
- Keep instruments moist until cleaned
- Clean and autoclave at 134°C for 18 minutes
- Do not use flash sterilization

### Program Evaluation

**"Systematic way to improve (infection control) procedures so they are useful, feasible, ethical, and accurate"**

- Develop standard operating procedures
- Evaluate infection control practices
- Document adverse outcomes
- Document work-related illnesses
- Monitor health care-associated infections

### Infection Control Program Goals



- **Provide a safe working environment**
  - Reduce health care-associated infections
  - Reduce occupational exposures

### Program Evaluation

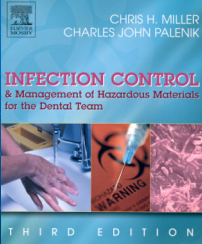
- **Strategies and Tools**
  - Periodic observational assessments
  - Checklists to document procedures
  - Routine review of occupational exposures to bloodborne pathogens



*"Program evaluation provides an opportunity to identify and change inappropriate practices, thereby improving the effectiveness of your infection control program."*

## RESOURCES

SEE HANDOUT

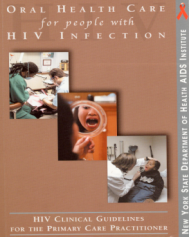


**INFECTION CONTROL & Management of Hazardous Materials for the Dental Team.**

Chris Miller & Charles Palenik

3<sup>rd</sup> Edition, 2005  
Elsevier-Mosby

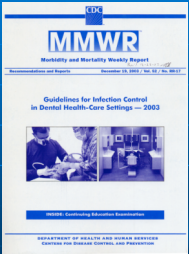
## RESOURCES



- TEXT, 2001
- WEB
- [www.hivguidelines.org](http://www.hivguidelines.org)

-includes PEP Hotline links across the state.

## RESOURCES



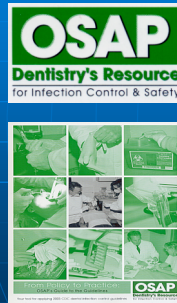
- [www.cdc.gov](http://www.cdc.gov)
- [www.apic.org](http://www.apic.org)
- [www.osha.gov](http://www.osha.gov)
- [www.fda.gov](http://www.fda.gov)
- [www.dec.state.ny.us](http://www.dec.state.ny.us)
- [www.biofilmsonline.com](http://www.biofilmsonline.com)

## RESOURCES



- [www.ada.org](http://www.ada.org)
- [www.adacatalog.org](http://www.adacatalog.org)
- [www.decs.nhgl.med.navy.mil](http://www.decs.nhgl.med.navy.mil)
- [www.aami.org](http://www.aami.org)
- [www.nysdental.org](http://www.nysdental.org)

## OSAP



- [www.osap.org](http://www.osap.org)
- "From Policy to Practice-OSAP's Guide to the Guidelines", 2004

## ULTIMATE GOAL of DENTAL INFECTION CONTROL

".....strengthen an already admirable record of safe dental practice"  
 -CDC 2003