PPE Implementation: Dental Community Experience

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THE DENTAL ADVISOR
Then .....
Herpetic whitlow -- a (hopefully) bygone occupational hazard
.... and Now
Are Your IC Precautions Effective?

Hepatitis B, C, etc
S A R S
Waterborne Diseases
MDR Tuberculosis
MDR -- Tuberculosis
Immune Compromised Persons
MDR Tuberculosis
Vaccine-Preventable Diseases
HIV / AIDS
Prions (CJD)
Bacterial Pneumonia
Drug Resistance
Pertussis
S W I N E  F L U
Viral Respiratory Tract Infection

CONFIDENCE
1973: CDC general IC recommendations

1976: *JADA*: Type B (serum) hepatitis and dental practice

“Are members of the dental profession at greater risk in contracting type B hepatitis than the general public? … YES”

“Should dentists and dental personnel who treat patients in high risk groups be *advised to wear gloves* in treating these patients? …. YES”

“Should all dental schools be urged to *train their dental students to wear gloves*? … YES”
1978: 1st ADA Infection Control Guideline

- Medical History
- Heat Sterilization
- Cleaning & Disinfection
- Physical Barriers: face masks, gloves, protective glasses
- Reducing the spread of MOs: mouthwash, rinse before tx; HVE
- Laboratory IC Procedures

Also Included:
- Disposable Equipment & Covers
- Flushing Waterlines—including using germicides
- Alteration of Equipment: new equipment design to ↓ contamination
- New handpieces that could tolerate heat
1981 - First hepatitis B vaccine licensed

1982 - Hepatitis B vaccine readily available

<table>
<thead>
<tr>
<th>Author</th>
<th>ADA Meeting</th>
<th>Infection, past or current (%)</th>
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<tbody>
<tr>
<td>Moseley</td>
<td>1972</td>
<td>14</td>
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<tr>
<td>Siew</td>
<td>1983</td>
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<td>Siew</td>
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<tr>
<td>Gruninger</td>
<td>1989</td>
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<td>Cleveland</td>
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* General dentists and some specialists
1981-CDC-first reports of AIDS infections

Pneumocystis Pneumonia – Los Angeles

In the period October 1980-May 1981, 5 young men, all active homosexuals, were treated for biopsy-confirmed *Pneumocystis carinii* pneumonia at 3 different hospitals in Los Angeles, California. Two of the patients died. All 5 patients had laboratory-confirmed previous or current cytomegalovirus (CMV) infection and candidal mucosal infection. Case reports of these patients follow.

Patient 1: A previously healthy 33-year-old man developed *P. carinii* pneumonia and oral mucosal candidiasis in March 1981 after a 2-month history of fever associated with elevated liver enzymes, leukopenia, and CMV viruria. The serum complement-fixation CMV titer in October 1980 was 256; in May 1981 it was 32.† The patient’s condition deteriorated despite courses of treatment with trimethoprim-sulfamethoxazole (TMP/SMX), pentamidine, and acyclovir. He died May 3, and postmortem examination showed residual *P. carinii* and CMV pneumonia, but no evidence of neoplasia.

Patient 2: A previously healthy 30-year-old man developed *P. carinii* pneumonia in April 1981 after a 5-month history of fever each day and of elevated liver-function tests, CMV viruria, and documented seroconversion to CMV, i.e., an acute-phase titer of 16 and a convalescent-phase titer of 28† in anticomplement immunofluorescence tests. Other features of his illness included leukopenia and mucosal candidiasis. His pneumonia responded to a course of intravenous TMP/SMX, but, as of the latest reports, he continues to have a fever each day.
Recommended Infection-Control Practices for Dentistry

Dental personnel may be exposed to a wide variety of microorganisms in the blood and saliva of patients they treat in the dental laboratory. These include Mycobacterium tuberculosis, hepatitis B virus, staphylococci, streptococci, cytomegalovirus, herpes simplex virus types I and II, human T-lymphotropic virus type III/lymphadenopathy-associated virus (HTLV-III/LAV), and a number of viruses that infect the upper respiratory tract. Infections may be transmitted in dental practice by blood or saliva through direct contact, droplets, or aerosols. Although not documented, indirect contact transmission of infection by contaminated instruments is possible. Patients and dental health-care workers (DHCWs) have the potential of transmitting infections to each other (1).

A common set of infection-control strategies should be effective for preventing hepatitis B, acquired immunodeficiency syndrome and other infectious diseases caused by bloodborne viruses (2-4). The ability of hepatitis B virus to survive in the environment (5) and the high titers of virus in blood (6) make this virus a good model for infection-control practices to prevent transmission of a large number of other infectious agents by blood or saliva. Because all infected patients cannot be identified by history, physical examination, or readily available laboratory tests (3), the following recommendations should be used routinely in the care of all patients in dental practices.

MEDICAL HISTORY

Always obtain a thorough medical history. Include specific questions about medications, current illnesses, hepatitis, recurrent illnesses, unintentional weight loss, lymphadenopathy, oral soft tissue lesions, or other infections. Medical consultation may be
Major Factor for Implementation of Better Infection Control Precautions – October 2, 1985

“Rock Hudson changed the public perception of AIDS, by putting a familiar face to AIDS.”
LOW OCCUPATIONAL RISK OF HUMAN IMMUNODEFICIENCY VIRUS INFECTION AMONG DENTAL PROFESSIONALS

Robert S. Klein, M.D., Joan A. Phelan, D.D.S., Katherine Freeman, Dr.P.H., Charles Schable, M.S., Gerald H. Friedland, M.D., Norman Trieger, D.M.D., M.D., and Neal H. Steigbigel, M.D.

Abstract We studied 1309 dental professionals (1132 dentists; 131 hygienists, and 46 assistants) without behavioral risk factors for the acquired immunodeficiency syndrome (AIDS) to determine their occupational risk for infection with human immunodeficiency virus (HIV). Subjects completed questionnaires on behavior; type, duration, and location of their dental practice; infection-control practices; and estimated numbers of potential occupational exposures to HIV. Serum samples were tested for antibodies to HIV and to hepatitis B surface antigen (unvaccinated subjects).

Fifty-one percent of the subjects practiced in locations where many cases of AIDS have been reported. Seventy-two percent treated patients who had AIDS or were at increased risk for it. Ninety-four percent reported accidental puncturing of the skin with instruments used in treating patients. Adherence to recommended infection-control practices was infrequent. Twenty-one percent of unvaccinated subjects had antibodies to hepatitis B surface antigen. Only one dentist without a history of behavioral risk factors for AIDS had serum antibodies to HIV.

We conclude that despite infrequent compliance with recommended infection-control precautions, frequent occupational exposure to persons at increased risk for HIV infection, and frequent accidental puncturing of the skin with sharp instruments, dental professionals are at low occupational risk for HIV infection. (N Engl J Med 1988; 318:86-90.)
Possible Transmission of Human Immunodeficiency Virus to a Patient during Invasive Dental Procedure

Received a case report of acquired immunodeficiency syndrome (AIDS) in a young woman for whom an epidemiologic investigation had not established a source for her infection.

Epidemiologic Notes and Reports Update: Transmission of HIV Infection During Invasive Dental Procedures -- Florida

Previous reports from an epidemiologic investigation in Florida strongly suggested that three patients (patients A, B, and C) became infected with human immunodeficiency virus (HIV) while receiving dental care from a dentist with acquired immunodeficiency syndrome (AIDS). This report describes findings that suggest HIV was transmitted to two additional patients (patients E and G). These two patients had no other confirmed exposures to HIV, had invasive procedures performed by the dentist, and were infected with HIV strains that are closely related genetically to the strains from the three previously reported patients and from the dentist (Table 1). In addition, this report describes the epidemiologic and laboratory investigation of another case of possible HIV transmission during an invasive dental procedure.

Notice to Readers Process for Identifying Exposure-Prone Invasive Procedures

On July 12, 1991, CDC published "Recommendations for Preventing Transmission of Human Immunodeficiency Virus and Hepatitis B Virus to Patients During Exposure-Prone Invasive Procedures" (1). This document defines exposure-prone invasive procedures as procedures during which there is a recognized risk for percutaneous injury to the health-care worker (HCW), and if such an injury occurs, the HCW's blood is likely to contact the patient's body cavity, subcutaneous tissue, and/or mucous membrane. Implementation of these recommendations requires that exposure-prone invasive procedures be identified by medical, surgical, and dental organizations whose members perform such procedures and by institutions at which such procedures are performed.
1991-OSHA: Bloodborne Pathogens Standard
Recommended Infection-Control Practices for Dentistry 1993

Summary

This document updates previously published CDC recommendations for infection-control practices in dentistry to reflect new data, materials, technology, and equipment. When implemented, these recommendations should reduce the risk of disease transmission in the dental environment, from patient to dental health-care worker (DHCW), from DHCW to patient, and from patient to patient. Based on principles of infection control, the document delineates specific recommendations related to vaccination of DHCWs; protective attire and barrier techniques; handwashing and care of hands; the use and care of sharp instruments and needles; sterilization or disinfection of instruments; cleaning and disinfection of the dental unit and environmental surfaces; disinfection and the dental laboratory; use and care of handpieces, antiretraction valves, and other intraoral dental devices attached to air and water lines of dental units; single-use disposable instruments; the handling of biopsy specimens; use of extracted teeth in dental educational settings; disposal of waste materials; and implementation of recommendations.
Guideline for Isolation Precautions in Hospitals

Julia S. Garner, RN, MN, and the Hospital Infection Control Practices Advisory Committee

- Hospital Infection Control Practices Advisory Committee Membership List
- Part I. Evolution of Isolation Practices
- Part II. Recommendations for Isolation Precautions in Hospitals
- Table I. Synopsis of Types of Precautions and Patients Requiring the Precautions
- Table II. Clinical Syndromes or Conditions Warranting Additional Empiric Precautions to Prevent Transmission of Epidemic Pneumonia Pending Confirmation of Diagnosis
- Appendix A. Type and Duration of Precautions Needed for Specific Infectious Conditions
- References
- Reviewers
Guidelines for Infection Control in Dental Health-Care Settings, 2003

- 2003 - MMWR R&R
  66 pages including appendices and over 500 references
- Evidence-based but also expert committee, strong theoretical rationale, medical standards
Lack of Adherence to Basic Infection Control Principles & Practices

Lessens Margin of Effectiveness Overlap

Increases Cross-Infection Risk

Ongoing Issues With PPE

Ineffectiveness of certain recommendations vs. Overkill of infection control vs. Overlap of effective procedures
Ergonomic Issue
Ambidextous vs. Rt / Left Fitted Gloves
Protective Eyewear with Side Shields

When it comes to personal protection "Size Does Matter"
Have we forgotten the clinical lessons of occupational infections?
Staphylococcal Conjunctivitis

Herpetic Keratitis
Proper Fit For Masks As Protective Barriers

**MICRON SIZES OF TYPICAL CONTAMINANTS**

ONE MICRON SIZE PARTICLE = 1/25 THOUSANDTH OF AN INCH

- Insecticide Dust
- Asbestos
- Major Smudging Sizes
- Tobacco Smoke
- Inside Dust
- Cooking Oil Smoke
- Viruses
- Bacteria
- Plant Spores
- Fumes
- Fog
- SMOG
- Fly Ash
- Paper Dust
- Toner (Dry Ink)

Visible with Microscope

Visible with Electron Microscope
Is your face mask providing adequate respiratory protection?
N – 95 Respirators

- NIOSH – approved disposable respirators – type of particulate respirator mask (PRM)
- For: HCW working in close contact with pts with A/H1N1 influenza or influenza-like illness
- More efficient than masks used for routine pt treatment
- Filter out up to 99% particles
- Work best when fitted properly - employers to ensure
- Note: more efficient the PRM, the more difficult breathing through them ---- greater perceived discomfort
Thank You