Infection Control in Practice
Dentistry’s Newsletter for Infection Control and Safety

Immunosuppression and Dental Treatment

The human immune system is responsible for helping us combat infections and diseases that we encounter through the air, water, blood, contaminated surfaces, and food. Immunocompromised individuals do not have the same natural defenses as those with a healthy immune system. Severe suppression of the immune system occurs for a number of reasons including congenital immunodeficiency, human immunodeficiency virus (HIV), leukemia, lymphoma, malignancy, radiation therapy, diabetes, large doses of corticosteroids and chemotherapy. Immunosuppression may be short-term (e.g., while receiving a particular medical treatment) or it may be chronic (e.g., due to congenital factors or diseases such as diabetes or HIV). In addition, the stages of disease affect the degree of immunosuppression, particularly with HIV.

In the dental office, immunocompromised patients and workers should take appropriate precautions to protect their health. For workers, the use of Standard Precautions and ensuring that all recommended vaccinations are up-to-date are the first line of defense. Immunocompromised individuals may need additional vaccinations not recommended for the general population. Workers undergoing therapies that result in immunosuppression should consult with their physician regarding what restrictions, if any, are necessary to continue performing their job. Certain infections require some work restrictions for limited durations of time due to the risk of transmission via the airborne route or due to specific situations (see Chart and Checklist pp. 4-5).

HIV and AIDS
It is important to understand the difference between HIV and Acquired Immunodeficiency Syndrome (AIDS) in order to provide appropriate precautions to protect the health of immunocompromised patients.

HIV is a progressive disease in which the immune status of the affected patient may change over the course of time. AIDS is the final stage of the HIV disease. The Centers for Disease Control and Prevention (CDC) definition of AIDS requires laboratory confirmation of HIV infection with a CD4+ T-lymphocyte count of less than 200 cells/mL or with one of 26 clinical conditions such as recurrent pneumonia.

Treatment of Immunosuppressed Dental Patients
Although dental patients who have low CD4 cell counts may be particularly susceptible to infection, it is not always cause to defer treatment and rarely reason to refer the patient to another provider. Under special circumstances, such as prior to surgical treatment, consult the patient’s medical provider regarding precautions that will help support the patient’s health during the healing period after treatment.

In no situation is it appropriate to postpone treatment or refer to another provider based on infection control concerns. The application of Standard Precautions protects both workers and patients from the transmission of blood-borne pathogens.

Learning Objectives
After reading this article, the reader should be able to:

- understand some of the common reasons for immunosuppression.
- explain the difference between HIV and AIDS.
- understand some of the issues to consider when treating patients receiving cancer treatment.
bome diseases. Therefore, base the decision to refer patients on the ability of the providers in your office to deliver the level of care necessary to treat the patient’s dental condition. For example, if you always refer patients with periodontal disease to a periodontist, it is appropriate to do the same for patients with HIV-related periodontitis if the treatment is beyond the capacity of the providers in the practice.

Cancer and dental treatment

The type of treatment therapies that cancer patients receive can aggressively toward human cells, both cancerous and normal. As part of the gastrointestinal tract, the tissues of the mouth are particularly susceptible to damage from cancer treatment. Cancers located in the head and neck are even more likely to result in oral complications.

One of the major complications that cancer patients experience is infection. Both radiation and chemotherapy affect the ability of cells to reproduce and can reduce the body’s white blood cells, which are vital to fighting infection. Patients who are preparing for cancer treatment should receive a careful assessment of existing conditions such as caries, periodontal disease, ill-fitting removable prostheses, the presence of calculus, broken teeth and others.

The damage of radiation therapy often lasts a lifetime and can cause permanent damage to salivary glands and other structures of the orofacial area. Since the normal methods of cell repair may no longer be present after treatment, hard and soft tissues may be more prone to problems, even long after treatment is complete.

Chemotherapy uses powerful drugs to interrupt the life cycle of cancer cells. However, this treatment also affects many normal cells of the body in the process. Chemotherapy inhibits the production of white blood cells, making infection more likely during treatment. Treatment may also affect the body’s ability to clot after dental procedures. White blood cell production usually returns to normal after discontinuing chemotherapy.

A relatively common side effect of chemotherapy is the development of mucositis. Infection will increase the severity of oral mucositis.

Oral infections in cancer patients may cause complications including bloodstream infection through compromised oral tissues. Always consult the patient’s oncologist before performing dental procedures to ensure the safety of the patient.

— OSAP
Compliance Corner

Centers for Disease Control and Prevention (CDC)

Immunocompromised persons are at risk for influenza complications but might have insufficient responses to vaccination. Close contacts of immunocompromised persons, including Health-Care Providers (HCP), should be vaccinated to reduce the risk for influenza transmission. The inactivated influenza vaccine (flu shot) is preferred over the live intranasal influenza vaccine (Flu-Mist®) for vaccinating household members, HCP, and others who have close contact with severely immunosuppressed persons during those periods in which the immunosuppressed person requires care in a protective environment (typically defined as a specialized patient-care area with a positive airflow relative to the corridor, high-efficiency particulate air filtration, and frequent air changes). Unless dental workers are in a healthcare environment as described above or have household contact with severely immunosuppressed persons, they may receive either type of influenza vaccine. Individuals over the age of 49 are advised to get the flu shot.


Cutting Edge

Controversial regulations debated

An opinion piece in the October 21, 2006 issue of the British Dental Journal (BDJ) set off a global debate regarding the United Kingdom (UK) government policy restricting the practice of dentists diagnosed as HIV-positive. Current UK policy requires dentists to cease providing most types of dental treatment when they discover they are HIV positive. Arguing that the policy is archaic and is a result of fear rather than science, Dr. David Croser makes a compelling argument against these sweeping restrictions. Since the publication of the initial article, the BDJ has published numerous letters from around the world regarding the issue of practice restrictions for HIV positive dentists. These letters are overwhelmingly in favor of a review or outright dismissal of the policy. The efforts of Dr. Croser and the subsequent writers to the BDJ have gained the attention of the UK Chief Dental Officer, who recently announced that there would be a working group to review the policy starting this fall. The eyes of the world are on the activities of this working group, and updates are available at www.hivdent.org.

Cancer treatment & oral health

The National Institute for Dental and Craniofacial Research (NIDCR) is dedicated to improving the nation’s oral health. The NIDCR has a wealth of information regarding oral health and cancer treatment. Most people are aware of common side effects of cancer treatment like nausea and hair loss. But many don’t realize that more than one-third of people treated for cancer developed complications that affect the mouth.

Head and neck radiation, chemotherapy, and blood and marrow transplantation can cause oral complications ranging from dry mouth to life-threatening infections. The publication series “Oral Health, Cancer Care, and You” informs HCP and cancer patients about steps they can take to reduce the risk and impact of these often painful side effects. Included are fact sheets and laminated pocket guides for dental and cancer professionals, patient education publications in both English and Spanish.” To access useful publications, including the one mentioned here, visit http://www.nidcr.nih.gov/HealthInformation/DiseasesAndConditions/CancerTreatmentAndOralHealth/
## Healthcare Worker Restrictions

The following are suggested work restrictions for health-care personnel with or exposed to major infectious diseases in healthcare settings, in the absence of national, state and local regulations:

<table>
<thead>
<tr>
<th>Disease/problem</th>
<th>Work restriction</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conjunctivitis</td>
<td>Restrict from patient contact</td>
<td>Until no discharge</td>
</tr>
<tr>
<td>Cytomegalovirus infection</td>
<td>No restriction</td>
<td></td>
</tr>
<tr>
<td>Diarrheal disease</td>
<td>Restrict from patient contact, contact with patient’s environment, and food-handling</td>
<td>Until symptoms resolve</td>
</tr>
<tr>
<td>Enteroviral infection</td>
<td>Restrict from care of infants, neonates, and immunocompromised patients and their environments</td>
<td>Until symptoms resolve</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>Restrict from patient contact, contact with patient environment, and food-handling</td>
<td>Until 7 days after onset of jaundice</td>
</tr>
<tr>
<td>Hepatitis B; personnel with acute or chronic hepatitis B surface antigenemia who do not perform exposure-prone procedures</td>
<td>No restriction†; refer to local regulations. Standard precautions should always be followed.</td>
<td></td>
</tr>
<tr>
<td>Hepatitis B; personnel with acute or chronic hepatitis B e antigenemia who perform exposure-prone procedures</td>
<td>Do not perform exposure-prone invasive procedures until counsel from a review panel has been sought; panel should review and recommend procedures that personnel can perform, taking into account specific procedures as well as skill and technique. Standard precautions should always be observed. Refer to local regulations or recommendations.</td>
<td>Until hepatitis B e antigen is negative</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>No restrictions on professional activity†</td>
<td></td>
</tr>
<tr>
<td>Herpes simplex (hands)</td>
<td>Restrict from patient contact and contact with patient’s environment</td>
<td>Until lesions heal</td>
</tr>
<tr>
<td>Herpes simplex (orofacial)</td>
<td>Evaluate need to restrict from care of patients that are at high risk</td>
<td></td>
</tr>
<tr>
<td>Human immunodeficiency virus; personnel who perform exposure-prone procedures</td>
<td>Do not perform exposure-prone invasive procedures until counsel from an expert review panel has been sought; panel should review and recommend procedures that personnel can perform, taking into account specific procedures as well as skill and technique. Standard precautions should always be observed. Refer to local regulations or recommendations.</td>
<td></td>
</tr>
<tr>
<td>Influenza (viral respiratory illness, acute febrile)</td>
<td>Exclude from the care of patients at high risk or contact with such patients’ environments during community outbreaks of respiratory syncytial virus and influenza</td>
<td>Until symptoms resolve</td>
</tr>
<tr>
<td>Measles (active)</td>
<td>Exclude from duty</td>
<td>Until 7 days after the rash appears</td>
</tr>
<tr>
<td>Measles (postexposure of susceptible personnel)</td>
<td>Exclude from duty</td>
<td>From fifth day after first exposure through twenty-first day after last exposure or 4 days after rash appears</td>
</tr>
</tbody>
</table>
### Disease/problem

<table>
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<tr>
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<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mumps (postexposure of susceptible personnel)</td>
<td>Exclude from duty</td>
<td>From twelfth day after first exposure through twenty-sixth day after last exposure, or until 9 days after onset of parotitis</td>
</tr>
<tr>
<td>Pediculosis (lice)</td>
<td>Restrict from patient contact</td>
<td>Until treated and observed to be free of adult and immature lice</td>
</tr>
<tr>
<td>Pertussis (active)</td>
<td>Exclude from duty</td>
<td>From beginning of catarrhal stage through third week after onset of paroxysms, or until 5 days after start of effective antibiotic therapy</td>
</tr>
<tr>
<td>Pertussis (postexposure-asymptomatic personnel)</td>
<td>No restriction; prophylaxis recommended</td>
<td></td>
</tr>
<tr>
<td>Pertussis (postexposure-symptomatic personnel)</td>
<td>Exclude from duty</td>
<td>Until 5 days after start of effective antibiotic therapy</td>
</tr>
<tr>
<td>Rubella (active)</td>
<td>Exclude from duty</td>
<td>Until 5 days after rash appears</td>
</tr>
<tr>
<td>Rubella (postexposure-susceptible personnel)</td>
<td>Exclude from duty</td>
<td>From 7th day after first exposure through 21st day after last exposure</td>
</tr>
<tr>
<td>Staphylococcus aureus infection (active, draining skin lesions)</td>
<td>Restrict from contact with patients and patient's environment or food-handling</td>
<td>Until lesions have resolved</td>
</tr>
<tr>
<td>Staphylococcus aureus infection (carrier state)</td>
<td>No restriction unless personnel are epidemiologically linked to transmission of the organism</td>
<td></td>
</tr>
<tr>
<td>Streptococcal infection Group A</td>
<td>Restrict from patient care, contact with patient's environment, and food-handling</td>
<td>Until 24 hours after adequate treatment started</td>
</tr>
<tr>
<td>Tuberculosis (active)</td>
<td>Exclude from duty</td>
<td>Until proven noninfectious</td>
</tr>
<tr>
<td>Tuberculosis (PPD converter)</td>
<td>No restriction</td>
<td></td>
</tr>
<tr>
<td>Varicella (active)</td>
<td>Exclude from duty</td>
<td>Until all lesions dry and crust</td>
</tr>
<tr>
<td>Varicella (postexposure-susceptible personnel)</td>
<td>Exclude from duty</td>
<td>From 10th day after first exposure through 21st (28th day if Varicella-zoster immune globulin [VZIG] administered) after last exposure</td>
</tr>
<tr>
<td>Zoster (localized, in healthy person)</td>
<td>Cover lesions, restrict from care of patients§ at high risk</td>
<td>Until all lesions dry and crust</td>
</tr>
<tr>
<td>Zoster (generalized or localized in immunosuppressed person)</td>
<td>Restrict from patient contact</td>
<td>Until all lesions dry and crust</td>
</tr>
<tr>
<td>Zoster (postexposure-susceptible personnel)</td>
<td>Restrict from patient contact</td>
<td>From tenth day after first exposure through twenty-first day (twenty-eight day if VZIG administered) after last exposure; or, if varicella occurs, when lesions crust and dry</td>
</tr>
</tbody>
</table>
**Glossary**

**CD4 Cell:** A type of white blood cell, which is one of the components of the immune system. Also known as T-cells, T helper cells, or CD4 lymphocytes. HIV replicates in these cells and destroys them during the process of replication. The loss of CD4 cells results in suppression of the immune system and allows the development of opportunistic infections.

**Congenital Immunodeficiency:** Immunodeficiency present at the time of birth, and is the result of genetic defects.

**Corticosteroids:** Potent chemical substances that can reduce swelling and inflammation quickly.

**Immunosuppression:** Suppression of the immune system. Immunosuppression may result from certain diseases such as HIV or lymphoma or from certain drugs such as some of those used to treat cancer. Immunosuppression may also be deliberately induced with drugs, as in preparation for bone marrow or other organ transplantation to prevent the rejection of the transplant.

**Mucositis:** the painful inflammation and ulceration of the mucous membranes lining the digestive tract, usually as an adverse effect of chemotherapy and radiotherapy treatment for cancer.

**Standard Precautions:** Standard precautions integrate and expand the elements of universal precautions into a standard of care designed to protect HCP and patients from pathogens that can be spread by blood or any other body fluid, excretion, or secretion. Standard precautions apply to contact with 1) blood; 2) all body fluids, secretions, and excretions (except sweat), regardless of whether they contain blood; 3) nonintact skin; and 4) mucous membranes.

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**Ask OSAP**

**Q:** I just started work in a new office and if the patient has HIV or hepatitis, we sterilize the instruments immediately after treatment, then remove them and run them through the ultrasonic and sterilize again. I have never done this before; is it something that OSAP recommends?

**A:** OSAP does not recommend "presterilizing" instruments in this manner for several reasons. Standard precautions are sufficient to protect workers and patients, regardless of whether or not they have a bloodborne disease. Putting instruments through a heat sterilization process before cleaning may cause the debris to become more difficult to remove, resulting in a need for hand scrubbing. Having such protocols in the office gives the impression that viruses will not be effectively destroyed by the routine measures of cleaning and sterilizing, which is not true.

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**Best Practices**

Resources for healthcare professionals and patients regarding access to high quality oral health care services for people living with HIV disease. [http://www.hivdent.org/](http://www.hivdent.org/)

If you wish to obtain one (1) hour of continuing education (CE) credit, complete the following test by selecting the best answer and fax or mail it to the OSAP Central Office for grading. Please include a check or credit card to cover handling charges. Pending satisfactory results (at least seven out of ten), you will be issued a letter for one (1) CE credit hour. OSAP is recognized by the American Dental Association as a CERP Provider. For more information, call OSAP at 800-298-6727 (410-571-0003).

For each question, pick the best answer.

1. The first line of defense that healthcare workers should take in protecting their health is:
   a. wear a mask     b. get recommended vaccinations     c. wear gloves     d. wear eye protection

2. There are ____ clinical conditions used in determining a diagnosis of AIDS.
   a. 12     b. 15     c. 21     d. 26

3. When is it appropriate to delay treatment or refer patients to another provider for infection control concerns?
   a. never     b. when employees have limited training     c. when the patient has fewer than 200 CD4 cells     d. when the patient has periodontitis

4. The type of cancer most likely to result in oral complications is:
   a. lung cancer     b. breast cancer     c. head and neck cancer     d. liver cancer

5. People over the age of ____ should get the flu shot instead of Flu Mist.
   a. 19     b. 29     c. 39     d. 49

6. Which European country requires dentists with HIV to cease most forms of dental treatment?
   a. Italy     b. United Kingdom     c. France     d. Germany

7. Potent chemical substances that can reduce inflammation are:
   a. corticosteroids     b. analgesics     c. benzodiazepams     d. ace inhibitors

8. Which type of hepatitis has no work restriction recommendations?
   a. hepatitis A     b. hepatitis B     c. hepatitis C     d. hepatitis D

9. Health care workers with measles should refrain from patient care until ____ days after rash appears.
   a. 7     b. 10     c. 14     d. 21

10. After discontinuing chemotherapy, white blood cell production usually:
    a. never returns to normal     b. returns to normal     c. increases     d. decreases

Mail or Fax completed test with the appropriate payment to receive one (1) hour of continuing education credit.

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MAIL TO: OSAP CE • P.O. Box 6297 • Annapolis, MD 21401 • USA • FAX TO: 410.571.0028
Have you ever noticed a white film or build-up on your dental instruments? You know your instruments are sterile because you diligently cleaned, packaged and sterilized them yourself.

If this sounds familiar, you may be skipping a key step in instrument processing. After thorough cleaning, preferably using a mechanical device such as an ultrasonic or washer/disinfector, it is very important to dry the instruments before packaging them for sterilization.

Thorough drying of instruments before pre-sterilization packaging is a key step in instrument processing for several reasons:

1. Tap water left on instruments when they go through the sterilization cycle may result in build-up of mineral deposits. These deposits are then “baked” on during the drying cycle in the sterilizer, resulting in that white film or spots that appear on the surface of the instruments.
2. If your office uses paper sterilization pouches, placing wet instruments in them can make the pouches more susceptible to tearing or ripping, compromising the sterility of the instruments after sterilization.
3. Finally, those same minerals will build up in the chamber, gaskets and other parts of your sterilizer and can shorten the life of the device or result in avoidable repairs.

Always dry instruments thoroughly using disposable or reusable towels before wrapping or packaging for the very best results.

Do not use a fan to promote drying, as this is not an acceptable practice. The only exception is if the fan is in a device intended for instrument drying and will not stir up dust and other contaminants in the room.

*Eve Cuny RDA MS*

As Editor-in-Chief of this publication, Eve encourages every OSAP member to submit their favorite practice tips. Sharing these time- and/or money-saving safety insights will help build the collective OSAP knowledge base.