Infection Control-related Administrative Policies and Work Restrictions

Course Author(s): Géza T. Terézhalmy, DDS, MA; Michaell A. Huber, DDS, Denise Kissell, BSDH, EFDA, MPH
CE Credits: 1 hour
Intended Audience: Dentists, Dental Hygienists, Dental Assistants, Dental Students, Dental Hygiene Students, Dental Assistant Students
Date Course Online: 07/01/2015
Last Revision Date: 04/07/2024
Course Expiration Date: 04/06/2027
Cost: Free
Method: Self-instructional
AGD Subject Code(s): 148

Online Course: www.dentalcare.com/en-us/ce-courses/ce473

Conflict of Interest Disclosure Statement

- Dr. Terézhalmy has done consulting work for Procter & Gamble and has served on the dentalcare.com Advisory Board.
- Dr. Huber is a member of the dentalcare.com Advisory Board.
- Ms. Kissell reports no conflicts of interest associated with this course. She has no relevant financial relationships to disclose.

Introduction

Participants in this course will be introduced to evidence-based information on infection control-related administrative policies and work restrictions to minimize (1) adverse reactions to latex products, (2) exposure of susceptible oral healthcare personnel (OHCP) to opportunistic infections, and (3) the exposure of patients to OHCP who have been exposed to or are infected with transmissible pathogens.

Course Contents

Overview

This course provides best available evidence for the development of strategies to minimize latex-related problems among oral healthcare personnel (OHCP) and patients, to minimize the exposure of OHCP with acute or chronic diseases to patients who have been diagnosed with a transmissible infectious disease, and to minimize the exposure of patients to OHCP who have been exposed to or have been diagnosed with an infectious disease.

Learning Objectives

Upon completion of this course, the dental professional should be able to:

- Develop and implement administrative policies and work-practice controls to minimize latex-related adverse effects among patients and OHCP.
- Develop and implement administrative policies and work restrictions for OHCP susceptible to opportunistic infections.
- Develop and implement administrative policies and work restrictions for OHCP exposed to or infected with transmissible pathogens.

Introduction

There are three major factors to consider when developing infection control-related administrative policies and work restrictions. OHCP and patients may (1) be susceptible to latex-related adverse reactions, (2) develop acute or chronic medical conditions, which may predispose them to opportunistic infections, or (3) may acquire potentially transmissible pathogens.[1-3] Policies dealing with these issues should (1) be written, (2) include a statement of authority that defines who can exclude OHCP from duty (e.g., personal physicians), and (3) be clearly communicated through education and training.[1-3]

Latex-related adverse reactions may be minimized by (1) reducing exposure to latex-containing materials by using appropriate work-practice controls, (2) substituting non-latex products where appropriate, (3) training and educating OHCP to recognize signs and symptoms of latex-related adverse effects and to monitor for signs and symptoms of latex sensitivity among OHCP and patients, and (4) establishing an institutional infrastructure for the seamless referral of OHCP and patients with signs and symptoms suggestive of latex allergy to a physician to confirm the diagnosis.[1,2]

OHCP and patients may also develop acute or chronic medical conditions such as immune deficiency syndromes, chronic diseases (e.g., diabetes mellitus, cancer, emphysema, heart failure, malnutrition), or undergo immunosuppressive therapy (e.g., radiotherapy, chemotherapy, anti-graft rejection medications, steroids, monoclonal antibodies) that render them susceptible to opportunistic infections. Such individuals should discuss the problem with their personal physician to determine if the condition might affect their ability to safely perform their duties.[1-3]

Finally, OHCP may become exposed to or infected with transmissible pathogens. Policies should encourage OHCP to report exposures or illnesses without jeopardizing wages, benefits,

or job status.[3] Decisions concerning work restrictions intended to prevent healthcare-associated transmission of pathogenic organisms should be based on the mode of transmission and the period of infectivity of the pathogen; and, in some instances, the level of circulating viral burden and level of risk for transmitting a pathogen (i.e., HBV, HCV, and HIV) in association with a procedure.[1-3]

Administrative and Work Practice Controls to Minimize Latex-related Adverse Effects

Latex is a product of the *Hevea brasiliensis* rubber tree. A milky sap flows in lactifers under the surface of the bark, which is collected by making diagonal cuts in the bark of the tree. Natural rubber latex contains cis-1,4-polyisoprene (the major component), proteins, lipids, carbohydrates, and numerous inorganic constituents such as potassium, manganese, copper, zinc, and iron.[4] Over 250 proteins have been identified in latex and about 30-60 of these are responsible for virtually all latex-related IgE-mediated immediate hypersensitivity (i.e., Gell and Coombs Type 1) reactions.[4-6] Fifteen of the principal allergens have been officially named by the International Nomenclature Committee of Allergens in the International Union of Immunological Societies (IUIS).[6]

Once the latex sap is harvested, ammonia is added to prevent autocoagulation and bacterial contamination.[5,7,8] There are two types of ammonia-latex concentrates: high ammonia-latex concentrate (0.7% ammonia by weight) and low ammonia-latex concentrate (0.2-0.3% ammonia by weight). While the higher ammonia concentration is more effective in strengthening and stabilizing natural rubber latex, it also increases the incidence of latex glove-related irritant contact dermatitis.[7,9]

In order to enhance elasticity, the stabilized ammonia-latex concentrate is subjected to vulcanization, i.e., it is heated in the presence of sulfur. To reduce the time and temperature required for the process, numerous "accelerators" and "promoters" (e.g., thiurams, mercaptobenzothiazoles, and carbamates) are added. Residuals of these chemicals are primarily responsible for latex-related cell-

mediated delayed hypersensitivity (i.e., Gell and Coombs Type IV) reactions such as allergic contact dermatitis.[7-12]

The incidence of latex allergy in the general population is 4.3%.[6] Patients with spina bifida, because of repeated exposure of mucous membranes to latex products during various medical/surgical procedures, are at highest risk of latex allergy with a prevalence rate that ranges from 40 to 65%.[6] Healthcare workers have the second highest risk of developing latex allergy with sensitization rates of 9.7-12.4, three times higher than in the general population.[6]

Clinical Manifestations of Adverse Reactions to Latex Products

Adverse reactions following exposure to latex products may be categorized as (1) irritant contact dermatitis (not associated with allergy), (2) cell-mediated delayed hypersensitivity reactions (allergic contact dermatitis), and (3) IgE-mediated immediate hypersensitivity reactions (urticaria, angioedema, allergic rhinoconjunctivitis, asthma, and generalized anaphylactic shock).[5,7,9,11,13]

Irritant Contact Dermatitis

The most common adverse reaction to latex products, specifically to latex gloves, is irritant contact dermatitis (ICD). It is characterized by dry, cracked, itchy, irritated areas of the skin (usually of the hands). The time of onset is gradual (over several days) as a result abrasion and maceration from donning and removing gloves, repeated hand washing and

drying, incomplete hand drying, the use of cleaners and sanitizers, and exposure to other workplace products and chemicals.[5,7,9,14]

Allergic Contact Dermatitis

Allergic contact dermatitis (ACD) is caused primarily by the accelerators, promoters, and antioxidants that are added to natural rubber latex during harvesting, processing, or manufacturing.[5,7-10,12,14] It is characterized by a papular, pruritic (itchy) rash (Figure 1); which usually begins 24 to 48 hours after contact with offending products and may progress to oozing vesicles and blisters and spread to areas of skin untouched by latex.[12,15,16] ACD may be the first sign that more serious reactions could occur with continued exposure.

IgE-mediated Immediate Hypersensitivity Reactions

The risk of progression from ACD to more serious allergic reactions is unknown. At least some of the patients, who initially develop ACD with repeated exposure to latex may experience *acute urticaria* considered to be a transitional stage between ACD and IgE-mediated immediate hypersensitivity reactions (Figure 2). Symptoms usually occur within 60 minutes of exposure to a latex product and are characterized by itching, redness, and a wheal and flare reaction at the site of contact.[17]

Angioedema is a feature of urticaria. It is characterized by localized, well-circumscribed, non-pitting swelling (edema) commonly affecting the lips (Figure 3), face, limbs, and trunk. When edema affects the larynx, it can lead to severe, life-threatening upper airway obstruction. Angioedema of the abdominal viscera is associated with severe pain. Other gastrointestinal symptoms of immediate type I hypersensitivity reactions may include vomiting and diarrhea.

Deposits of latex proteins on mucosal surfaces of the eyes and upper respiratory tract can lead to *allergic rhinoconjunctivitis*. Clinical signs and symptoms include watery eyes, nasal congestion, sneezing, rhinorrhea, and an itching sensation of the oropharyngeal mucosa. If sufficient aeroallergens penetrate below the level of the glottis, the allergic response progresses to *acute bronchospasm*.[18] It is estimated that 2.5% of healthcare workers are susceptible to latex aeroallergen-induced *acute asthma*.[19]

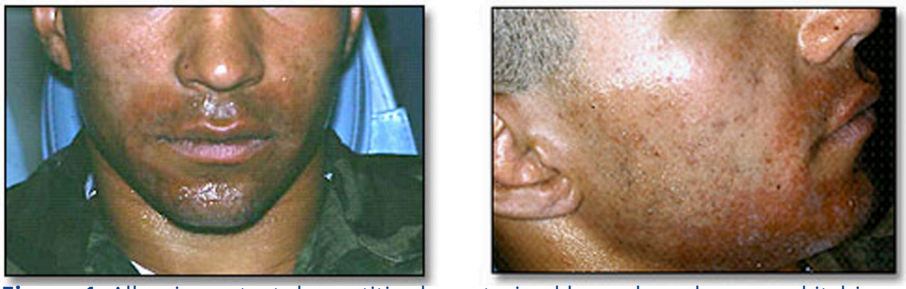


Figure 1. Allergic contact dermatitis characterized by rash, redness, and itching, which began about 24 hours after dental treatment under a rubber dam.

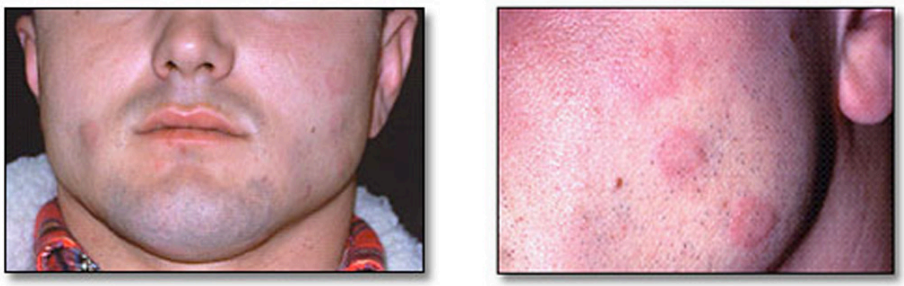


Figure 2. Acute urticaria characterized by pruritic, red wheals that range from 1.5 to 3.0 cm in diameter, which began about an hour after exposure to latex gloves.

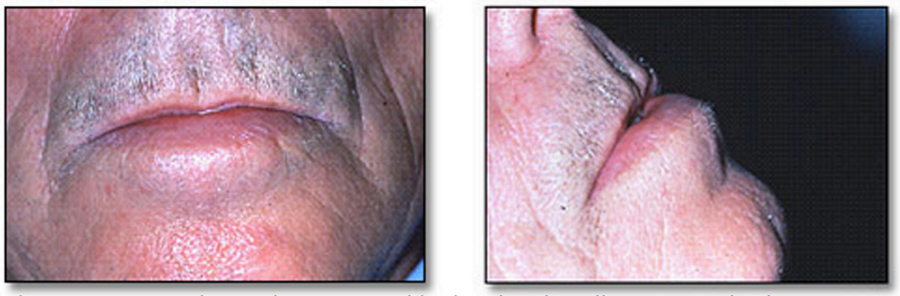


Figure 3. Angioedema characterized by localized, well-circumscribed, non-pitted swelling affecting the lips.

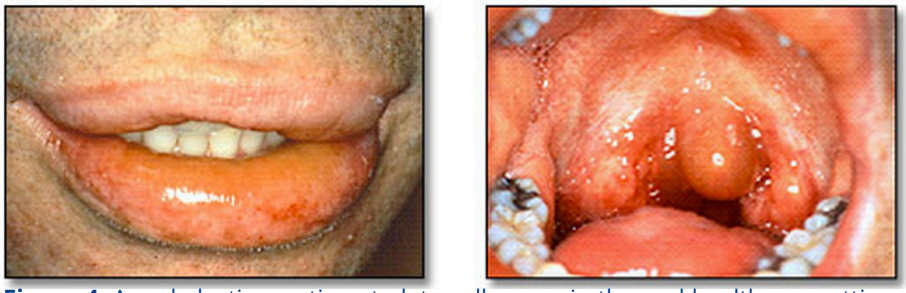


Figure 4. Anaphylactic reactions to latex allergens in the oral healthcare setting characterized by angioedema of the lips and oropharynx associated with stridor, wheezing, hypotension, and tachycardia.

When latex proteins interact with IgE antibodies on mast cells and basophiles, a massive release of histamine and other substances result in *generalized anaphylactic shock*. Early signs and symptoms include weakness, dizziness, flushing and urticaria. It progresses rapidly and sequentially to laryngeal edema (resulting in stridor) and bronchospasm (resulting in wheezing); followed by hypotension, tachycardia, and vascular collapse as a result of decreased systemic vascular resistance (Figure 4).[13,20]

While anaphylaxis is seldom the first sign of latex allergy, latex exposure is estimated to account for 12 to 40% of anaphylactic reactions that occur during adult surgery.[21-23] In oral healthcare settings, anaphylactic reactions to latex products have been reported to occur with exposure to gloves, dental rubber dams, and to latex-related aeroallergens.[7] Rapid detection of signs and symptoms with immediate intervention is necessary to prevent serious complications and death.[9,13,24]

Diagnosing Allergy to Latex

OHCP and patients who relate a history of papular, pruritic (itchy) rash of the skin; urticaria, angioedema, and rhinoconjunctivitis; coughing, shortness of breath, or wheezing; and/or a drop in blood pressure following exposure to latex should be suspected of latex allergy. The diagnostic algorithm for latex allergy entails obtaining a thorough medical history, skin-patch testing, serum IgE measurement, and glove provocation testing.[7,23,25,26]

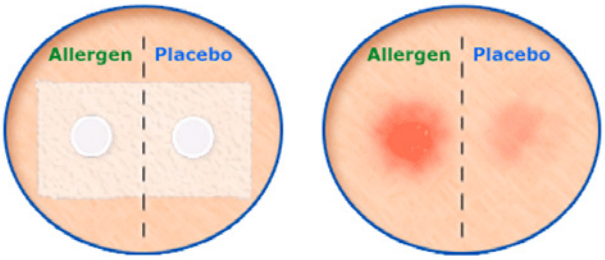
Medical History

Obtaining a complete medical history is the first step in diagnosing latex allergy. As noted earlier, certain patient populations (i.e., those with neural tubal defects and occupational exposure) are at higher risk for latex allergies than the general population. Other risk factors include a history of atopy, multiple surgeries, previous hand dermatitis of any kind, and allergies to foods known to have allergens that cross-react with latex.[23,27]

Many latex proteins, collectively called pathogenesis-related (PR) proteins, serve to protect the rubber tree from a variety of environmental threats such as infections (fungal, bacterial, and viral), wounding, and chemical insults.[28] These same proteins are also expressed in a number of other plant species.[29]

For example, the latex protein ß-1,3-glucanase shares high association with the ß-1-3-glucanase proteins found in avocado, banana, chestnut, and kiwi.

Other latex PR proteins share moderate association with analogous proteins in apple, carrot, celery, melon, papaya, tomato, and potato. Low or undetermined association exists between still other latex PR proteins and many other fruits and vegetables, e.g., turnip and zucchini.[30] It is estimated that a patient with a history of fruit allergy has an 11% risk of concurrent latex allergy.[31] Conversely, up to 50% of patients with latex allergy are hypersensitive to some plant-derived foods.[5,23,32]



Skin-patch Testing (SPT)
SPT is reliable for diagnosing delayed hypersensitivity reactions to latex additives and helps to differentiate between ICD and ACD. It is performed by applying allergen samples to intact skin and covering them with a dressing. The patient is checked for skin reaction at 30 minutes, 24 hours, and 48 hours.[7,23] Swelling, redness, or blistering characterize a positive test.

If the test is negative, the site is reexamined again at 72 and 96 hours because weak reactions may appear later. A refinement of the technique, the thin layer rapid use epicutaneous (TRUE) test (Allerderm, Petaluma, CA, USA), has been licensed by the FDA and is available commercially. The TRUE test consists of a pre-prepared testing strip containing 24 of the most common contact allergens, including four rubber screening mixes and mercaptobenzothiazole.[33]

Radioallergosorbent Test (RAST)
RAST is a quantitative measurement of allergen-specific IgE antibodies. It is the test of choice to confirm latex-related immediate hypersensitivity reactions.[23] There are five FDA-licensed assays available (e.g., Alastat [Diagnostic Products Corporation, Los Angeles, CA, USA], ImmunoCAP [Phadia AB, Portage, MI, USA], CLA Allergen-Specific IgE Assay [Hitachi Chemical Diagnostics, Mountain View, CA, USA], and HY TECH-288 [Hycor Biomedical Incorporated, Garden Grove, CA, USA]). Their sensitivity and selectivity varies from 50-90% and 80-87%, respectively.[23]

Glove Provocation Testing (GPT)
GPT is useful when a person's clinical history is inconsistent with RAST results.[23] During the test, the patient wears one finger of a latex glove. If there is no urticarial reaction after 15 minutes, the exposed surface area is increased (i.e., two fingers and so on). A negative GPT is confirmed by the absence of urticaria after wearing a full glove for 15 minutes.[7,23] A positive GPT is confirmed by the presence of urticaria. Because of variations of latex content in gloves, GPT may be unsafe in highly sensitized persons.[5]

Preventive Strategies for the Oral Healthcare Settings

The amount of latex exposure to produce sensitization or signs and symptoms of an allergic reaction is unknown. However, reductions in exposure to latex products have been reported to be associated with decreased sensitization and associated signs and symptoms.[15,17,27,34,35] Allergic reactions to latex products in the healthcare setting can be minimized or prevented by following the recommendations of the National Institute for Occupational Safety and Health (Table 1).[36]

Some of the common products used in dentistry that contain latex and a list of alternative products is presented in Table 2. Practitioners should routinely check with their suppliers to stay current on the availability of latex-free substitutes. The cost of using non-latex gloves and other latex-free alternatives in healthcare settings has been analyzed. It was determined that maintaining a latex-free environment is less expensive when compared to potential disability and liability costs associated with exposure to latex products.[37,38]

Table 1. Strategies for the Prevention of Adverse Reactions to Latex Products.[39]

- ✓ General strategies
  - Whenever possible, use non-latex gloves and other non-latex products
  - If latex gloves are preferred, use reduced protein, powder-free gloves
  - Do not use oil-based hand creams or lotions unless they have been shown to reduce latex-related problems
  - After removing latex gloves, perform adequate hand hygiene
  - Use good housekeeping practices to minimize latex-contaminated dust in the work place
    - Identify areas contaminated with latex for frequent cleaning
    - Change ventilation filters frequently in latex-contaminated areas
- ✓ Strategies for OHCP suspected of latex allergy
  - Avoid direct contact with latex gloves and other latex products until evaluated by a physician
- ✓ Strategies for OHCP with allergic contact dermatitis
  - A trial of reduced-protein, powder-free, additive-free, or latex-free gloves may resolve dermatitis
- ✓ Strategies for OHCP with evidence of immediate hypersensitivity to latex
  - Avoid all contact with latex gloves and other latex products
  - Avoid areas where latex aeroallergens may be present
  - Follow physicians recommendations for dealing with allergic reactions
- ✓ Strategies for the prevention of adverse reactions to latex products in patients
  - Identify patients who may be allergic to or are at high risk for allergy to latex
  - Patients allergic to latex must be treated in a latex-free environment
    - Latex free treatment room
      - Patients should be scheduled for first appointment of the day
      - Latex-free gloves and other latex-free devices
      - Latex-free procedure tray
      - Latex-free emergency kit
- ✓ Periodically review and update preventive strategies

Table 2. Dental Products that Frequently Contain Latex and Alternatives.[33]

Latex Product	Alternatives
Gloves	Vinyl, nitrile, neoprene, polymer gloves
Bite blocks	Silicone bite blocks
Polishing cups	Non-latex polishing cups
Dental dams	Non-latex dam
Orthodontic elastics	Use ligature wires
Adhesive tape	Cloth, paper or silk tape
Anesthetic cartridges	Latex-free cartridges
Bite wing tabs	Paper loops
Impression materials (check MSDS)	Latex-free alginate
Masks	Non-latex cone-shaped or tie-on
Gutta percha	No good alternative; ensure gutta percha does not protrude through apex

Treatment Strategies

Once an individual develops an allergy to latex, special precautions are needed to prevent exposure at home, at work, and during healthcare. Patients and OHCP should be aware of common natural rubber latex products, as well as foods with cross-reactive proteins.[23] Pretreatment with antihistamines, corticosteroids, and bronchodilators is unpredictable in preventing IgE-mediated anaphylaxis and is not recommended. Complete avoidance is the most effective approach to dealing with latex allergy.[39]

Signs and symptoms of latex allergy resolve quickly with avoidance; however, elevated IgE levels can remain detectable for more than 5 years after exposure.[40] This observation underscores the importance of a policy of latex avoidance. OHCP and patients with a history of immediate hypersensitivity reaction to latex proteins should carry epinephrine and wear a Medical Alert bracelet.[14] Strategies for the management of emerging allergic reactions to latex are presented in Table 3.[41-43]

Table 3. Strategies for the Treatment of Allergic Reactions to Latex Products.[44,45]

Allergic contact dermatitis	1. Stop exposure to latex 2. Topical high-potency corticosteroid a. Fluocinonide (Lidex®, others), 0.05% ointment
Allergic rhinitis	1. Stop exposure to latex 2. Intranasal corticosteroid a. Fluticasone propionate (Flonase®, others), 1-2 sprays in each nostril
Acute urticaria	1. Stop exposure to latex 2. Oral H_1-receptor antagonist a. Cetirizine (Zyrtec®, others), 5-10 mg, once per day
Acute asthma	1. Stop exposure to latex 2. Place patient in sitting position 3. Provide immediate oxygen a. 2-4 L/min by nasal cannula 4. Inhaled beta$_2$-adrenergic agonist a. Albuterol (Proventil®, others), 2-4 puffs 5. If wheezing persists, activate EMS
Anaphylaxis	1. Stop exposure to latex 2. Place patient in supine position and elevate legs 3. Administer epinephrine a. Adults: epinephrine (Symjepi®, EpiPen®, others), 0.3 mg, IM (anterolateral thigh) – may be repeated in 20 minutes if necessary b. Child: epinephrine (Symjepi®, EpiPen Jr.®, others), 0.15 mg, IM (anterolateral thigh) – may be repeated in 20 minutes if necessary 4. Activate EMS 5. CPR, if indicated

Administrative Policies and Work Restrictions of OHCP Susceptible to Opportunistic Infections

OHCP with acute or chronic medical conditions such as immune deficiency syndromes, chronic diseases (e.g., diabetes mellitus, cancer, emphysema, heart failure, malnutrition), those undergoing immunosuppressive therapy (e.g., radiotherapy, chemotherapy, anti-graft rejection medications, steroids, monoclonal antibodies), and older OHCP are susceptible to opportunistic infections or the reactivation of latent vaccine-preventable infections.[2]

Such individuals should discuss the problem with their personal physician to determine if their medical condition might affect their ability to safely perform their duties. Furthermore, this would be an opportune time to review the vaccination status of the individual with respect to vaccine preventable diseases, i.e., hepatitis B, influenza, varicella/zoster, measles/mumps/rubella, human papillomavirus (HPV), tetanus/diphtheria/pertussis, meningococcus, pneumococcus, hepatitis A, RSV, and COVID infections.

Administrative Policies and Work Restrictions of OHCP Exposed to or Infected with Transmissible Pathogens

Infection is the invasion and multiplication of microorganisms in body tissues resulting in local cellular injury as a consequence of competitive metabolism, toxin production, and immune-mediated reactions. The "chain of infection," the transmission of infectious agents in healthcare settings requires three elements: (1) a source or reservoir of infectious agents, (2) a susceptible host with a portal of entry receptive of the agent, and (3) a mode of transmission for the agent.[1,2]

OHCP Infected with a Bloodborne Pathogen

A guideline for the management of healthcare workers who are infected with the HBV, HCV, and HIV was developed by the Society of Healthcare Epidemiology of America (SHEA).3 It recommends that infected OHCP should not be totally prohibited from patient care solely on the basis of an infection with a bloodborne pathogen and that clinical privileges be graduated according to the level of risk for transmitting a bloodborne pathogen (i.e., HBV, HCV, and HIV) in association with a procedure (Table 4) and the level of circulating viral burden of the infected OHCP.[3]

This strategy encourages routine voluntary, confidential testing and emphasizes that clinicians who perform Category III procedures should know their immune or infection status, i.e., their relative viral load with respect to HBV, HCV, and HIV.[3] Clinicians who are institutionally based and develop one of these infections are ethically bound to report it to their institution's occupational medicine department. Private practitioners are ethically bound to report their infectious status to the local public health department.

These recommendations take into consideration evidence that (1) the HBeAg is not a sensitive marker for HBV infectivity (2) the availability of molecular tests that measure a patient's circulating viral burden for hepatitis B, hepatitis C, and human immunodeficiency viruses with precision, and (3) the availability of antiviral agents for the treatment of chronic HBV infection, both acute and chronic HCV infection, and HIV infection.[3] Table 5 lists recommended clinical privileges for healthcare providers with HBV, HCV, and HIV infection.[3]

OHCP Exposed to or Infected with Measles, Mumps, and Rubella

The measles, mumps, rubella viruses and the novel SARS-CoV-2 are spread primarily by droplets and droplet nuclei generated by an infected person during talking, breathing, coughing, and sneezing; by direct contact with nasal or throat secretions; and less frequently by touching freshly contaminated articles and environmental surfaces.[2,44-46] In oral healthcare settings, administrative policies and work restrictions are primarily predicated on the mode of transmission of these pathogens and the period of infectivity of exposed or infected OHCP (Table 6).[1,2]

The SARS-CoV-2 (COVID-19) pandemic was declared over on May 11, 2023[47] and the infection-related isolation / return to work guidelines for the public were substantially modified (relaxed) on March 1, 2024.[48] However, the more restrictive guidance (last updated on September 23, 2022) addressing SARS-CoV-2 infection and return to work guidelines in the healthcare setting remain in effect and are briefly summarized in Table 7.

Table 4. Oral Healthcare-associated Procedures According to the Level of Risk for Bloodborne Pathogen Transmission.[3]

- ✓ Category I procedures: minimal risk of bloodborne pathogen transmission
  - History-taking
  - Extraoral physical examination
  - Intraoral examination
    - Including the use of a tongue depressor, mirror, explorer, or a periodontal probe
  - Routine preventive dental procedures - not requiring the administration of local anesthesia
    - Application of sealants or topical fluoride
    - Prophylaxis – not to include subgingival scaling with a hand instrument
    - Orthodontic procedures
    - Prosthetic procedures
      - Fabrication of complete dentures
    - Hands-off supervision of surgical procedures
- ✓ Category II procedures: theoretical possibility of bloodborne pathogen transmission
  - Dental procedures requiring the administration of local anesthesia
    - Operative, endodontic, and prosthetic procedures and periodontal scaling and root planing
      - Use of ultrasonic instruments greatly reduce or eliminate the risk of percutaneous injury to the provider
      - If significant physical force with hand instruments is anticipated to be necessary, scaling and root planing and other Category II procedures could reasonably classified as Category III
    - Minor surgical procedures
      - Simple tooth extraction not requiring excessive force
      - Soft tissue flap procedures
      - Minor soft tissue biopsy
      - Incision and drainage of an abscess
  - Insertion of, maintenance of, and drug administration into arterial and central venous lines
- ✓ Category III procedures: definite risk of bloodborne pathogen transmission
  - General oral surgery
    - Surgical extractions
      - Removal of an erupted or unerupted tooth requiring elevation of a mucoperiosteal flap, removal of bone, or sectioning of tooth and suturing
    - Apicoectomy and root amputation
    - Periodontal curettage, gingivectomy, and mucogingival and osseous surgery
    - Alveoplasty and alveolectomy
    - Endosseous implant surgery
  - Open extensive head and neck surgery involving bone
  - Trauma surgery, including open head injuries, facial fracture reductions, and extensive soft issue trauma
  - Any open surgical procedure with a duration of more than 3 hours, probably necessitating glove change

Table 5. Recommended Clinical Privileges for Healthcare Providers with HBV or HCV Infection.[3]

Pathogen	Circulating Viral Burden	Clinical Privileges
HBV and HCV	$<10^4$ GE/mL	Category I, II, and III procedures*
	$\geq 10^4$ GE/mL	Category I and II procedures*
HIV	$<5 \times 10^2$ GE/mL	Category I, II, and III procedures*
	$\geq 5 \times 10^2$ GE/mL	Category I and II procedures*

*Clinical privileges predicated on the infected healthcare provider meeting the following requirements:

- ✓ No evidence of having transmitted infection to patients
- ✓ Obtained advice from an Expert Review Panel about continued practice
- ✓ Follow-up twice a year to determine viral burden
- ✓ Follow-up by a personal physician who has expertise in the management of infections with HBV, HCV, and HIV and who is allowed to communicate with the Expert Review Panel about the infected provider's clinical status
- ✓ Consulted with an expert about optimal infection control procedures and strictly adheres to the recommended procedures
- ✓ Routine use of double gloving and frequent glove changes during procedures (particularly when performing tasks known to compromise glove integrity) for all instances in patient care for which gloving is recommended
- ✓ Agreed to and signs a contract or letter from the Expert Review Panel that characterizes the infected providers responsibilities

Table 6. Work Restrictions: Measles, Mumps, and Rubella Infections.[1,2]

	Infectious State	Restrictions
Measles	✓ Susceptible OHCP ✓ Post-exposure	✓ Exclude from duty ✓ From the 5th day after first exposure through the 21st day after last exposure **OR** ✓ For 4 days after rash appears
	✓ OHCP with acute infection	✓ Exclude from duty ✓ For 7 days after rash appears
Mumps	✓ Susceptible OHCP ✓ Post-exposure	✓ Exclude from duty ✓ From the 12th day after first exposure through the 26th day after last exposure **OR** ✓ For 5 days after onset of parotitis
	✓ OHCP with acute infection	✓ Exclude from duty ✓ For 5 days after onset of parotitis (2017 update)
Rubella	✓ Susceptible OHCP ✓ Post-exposure	✓ Exclude from duty ✓ From the 7th day after first exposure through the 21st day after last exposure
	✓ OHCP with acute infection	✓ Exclude from duty ✓ For 7 days after rash appears

Table 7. Work Restrictions: SARS-CoV-2.[49]

Infectious State	Restrictions
✓ OHCP with potential exposure*	✓ Asymptomatic OHCP do not require work restrictions ✓ Self-monitor for fever (>100°) or symptoms consistent with COVID-19 ✓ Medical evaluation as needed
	✓ For OHCP who are not severely immunocompromised and who were asymptomatic throughout their infection may return to work when at least 7 days have passed since the date of their first positive viral diagnostic test. ✓ OHCP with mild to moderate illness who are not severely immunocompromised, exclude from work until: • At least 7 days have passed since symptoms first appeared *and* • At least 24 hours have passed since last fever without the use of fever-reducing medications *and* • Symptoms (e.g., cough, shortness of breath) have improved • Consider consultation with infection control expert Note: OHCP who are moderately to severely immunocompromised may produce replication-competent virus beyond 20 days after symptom onset or, for those who were asymptomatic throughout their infection, the date of their first positive viral test. Consultation with infectious diseases specialists is recommended. Use of a test-based strategy for determining when these HCP may return to work could be considered.

* Risk criteria for potential exposure:

Prolonged close contact (>15 minutes) with a patient, visitor, or HCP with confirmed SARS-CoV-2 infection *and*

- ✓ OHCP not wearing a respirator or facemask
- ✓ OHCP not wearing eye protection if the person with SARS-CoV-2 infection was not wearing a cloth face covering or facemask.
- ✓ OHCP not wearing all recommended PPE (i.e., gown, gloves, eye protection, respirator) while performing an aerosol-generating procedure.

OHCP Exposed to or Infected with Herpes Simplex and Varicella Zoster

The herpes simplex and varicella zoster viruses are transmitted primarily from person-to-person by direct contact with vesicular exudates, contaminated saliva, genital fluids (herpes simplex); inhalation of droplet nuclei from infected respiratory tract (varicella zoster); and less frequently, by contact with freshly contaminated articles and environmental surfaces.[50,51] In oral healthcare settings, administrative policies and work restrictions are primarily predicated on the mode of transmission of these pathogens and the period of infectivity of exposed or infected OHCP (Table 8).[1,2]

OHCP Exposed to or Infected with Influenza, *Streptococcus*, *Meningococcus*, and *Mycobacterium Tuberculosis*

Influenza, *streptococcus*, *meningococcus*, and *Mycobacterium tuberculosis* are spread from person-to-person primarily via airborne droplets generated by an infected person during talking, breathing, coughing, and sneezing; contact with respiratory secretions; and less frequently by contact with freshly contaminated articles and environmental surfaces.[52-55] In oral healthcare settings, administrative policies and work restrictions are primarily predicated on the mode of transmission of these pathogens and the period of infectivity of exposed or infected OHCP (Table 9).[1,2]

Table 8. Work Restrictions: Influenza, *Streptococcus*, *Meningococcus*, and *Mycobacterium Tuberculosis*.[1,2]

Infectious State		Restrictions
Herpes simplex	✓ OHCP with acute orofacial herpes	✓ Cover lesions ✓ Restrict from the care of high-risk patients • Until lesions heal
	✓ OHCP with acute herpetic whitlow	✓ Exclude from duty • Until all lesions heal
	✓ OHCP with acute genital herpes	✓ No Restrictions
Varicella (chicken pox)	✓ Susceptible OHCP • Post-exposure	✓ Exclude from duty • From the 10th day after first exposure through the 21st day after last exposure
	✓ OHCP with acute infection	✓ Exclude from duty • Until all lesions dry and crust
Varicella zoster (shingles)	✓ Susceptible OHCP • Post-exposure	✓ Exclude from duty • From the 5th day after first exposure through the 21st day after last exposure.
	✓ Healthy OHCP with acute infection	✓ Cover lesions ✓ Restrict from the care of high-risk patients • Until all lesions dry and crust
	✓ Immunocompromised OHCP with acute infection	✓ Exclude from duty • Until all lesions dry and crust

Table 9. Work Restrictions: Influenza, Streptococcus, Meningococcus, and Mycobacterium Tuberculosis.[1,2]

Infectious State		Restrictions
Influenza	✓ OHCP with acute infection and fever	✓ Restrict from the care of high-risk patients ✓ Until acute symptoms resolve
Group A *streptococci*	✓ OHCP with acute infection	✓ Exclude from duty ✓ Until 24 hours after start of effective therapy
Meningococcus	✓ OHCP with acute infection	✓ Exclude from duty ✓ Until 24 hours after start of effective therapy
Mycobacterium tuberculosis	✓ Mantoux tuberculin skin test (TST)-positive OHCP	✓ No Restrictions
	✓ OHCP with acute infection	✓ Exclude from duty ✓ Until proven non-infectious

OHCP Infected with the HAV

The hepatitis A virus (HAV) is primarily transmitted by the fecal-oral route, either by person-to-person contact or consumption of contaminated food or water. In oral healthcare settings, administrative policies and work restrictions are primarily predicated on the mode of transmission of these pathogens and the period of infectivity of exposed or infected OHCP.[56] Infected OHCP should be restricted from patient contact, contact with patient's environment, and food-handling until 7 days after onset of jaundice.[1,2]

Summary

Adverse reactions to latex products in the oral healthcare setting can result in potentially serious health problems. A reasonable reduction of latex products should be considered for the protection of both OHCP and the patient. Likewise, protocols to minimize the exposure of at-risk OHCP to patients who have been diagnosed with a transmissible infectious disease, and to minimize the exposure of patients to OHCP who have been exposed to or have been diagnosed with an infectious disease should be written and clearly communicated through education and training.

Course Test Preview

To receive Continuing Education credit for this course, you must complete the online test. Please go to: *www.dentalcare.com/en-us/ce-courses/ce473/test*

1. Over 250 latex proteins have been identified, but how many have been formally named by the International Nomenclature Committee of Allergens as allergens?

A. 1
B. 5
C. 15
D. 25

2. Naturally occurring proteins found in latex are believed to be responsible for inducing what type of adverse reaction?

A. IgE-mediated immediate hypersensitivity (i.e., Gell and Coombs Type 1) reactions
B. Latex glove-related irritant contact dermatitis
C. Delayed hypersensitivity (i.e., Gell and Coombs Type IV) reactions
D. Latex glove-related allergic contact dermatitis

3. The most common form of adverse reaction to latex glove use is _____.

A. IgE-mediated immediate hypersensitivity (i.e., Gell and Coombs Type 1) reactions
B. Latex glove-related irritant contact dermatitis
C. Cell-mediated delayed hypersensitivity (i.e., Gell and Coombs Type IV) reactions
D. Latex glove-related allergic contact dermatitis

4. Which statement is inaccurate regarding irritant contact dermatitis?

A. It is associated with repeated donning and removing of gloves.
B. It is associated with repeated hand washing and drying.
C. It is associated with incomplete hand drying.
D. It associated with a rapid development (within hours).

5. Which statement is inaccurate regarding allergic contact dermatitis?

A. Primarily caused by the accelerators, promoters, and antioxidants added to rubber latex.
B. It is characterized by a papular, pruritic (itchy) rash, within 24 to 48 hours after contact.
C. The associated oozing vesicles and blisters are limited to areas of skin touched by latex.
D. It may be the first sign that more serious reactions could occur with continued exposure.

6. Type I immediate hypersensitivity reactions are mediated by _____.

A. proteins
B. antibodies
C. skin cells
D. pathogens

7. When latex proteins interact with antibodies on mast cells and basophiles, a massive release of histamine and other substances result in _____.

A. acute urticaria
B. angioedema
C. allergic rhinoconjunctivitis
D. generalized anaphylactic shock

8. Which type of testing is recommended to confirm the presence of immediate hypersensitivity reaction?

A. Skin patch test
B. Radioallergosorbant test (RAST)
C. T.R.U.E. test
D. Glove provocation test

9. Which historical clue would be the least likely to indicate a possible latex sensitivity?

A. allergies to foods known to have allergens that cross-react with latex
B. signs and symptoms of an allergic response after exposure to latex
C. previous hand dermatitis of any kind, atopy, and multiple surgical exposures
D. lactose sensitivity or lactose intolerance

10. A positive skin patch testing is diagnostic of _____.

A. a delayed (Type IV) hypersensitivity reaction
B. an immediate (Type I) hypersensitivity reaction
C. irritation contact dermatitis
D. the presence of allergen-specific IgE antibodies

11. Which is ineffective in reducing latex exposure when performing routine restorative dentistry?

A. Whenever possible, use non-latex gloves and other non-latex products.
B. If latex gloves are preferred, use reduced protein, powder-free gloves.
C. Use oil-based hand creams or lotions before and after each glove use.
D. After removing latex gloves, perform adequate hand hygiene.

12. Which should be avoided when treating a patient who has a confirmed type I hypersensitivity to latex?

A. Treat the patient in a latex-free environment.
B. Schedule them for last appointment of the day.
C. Use a latex-free procedure tray.
D. Have a latex-free emergency kit at the ready.

13. The most effective medication available to treat allergic contact dermatitis is _____.

A. Epinephrine, IM
B. oral H1-receptor antagonist
C. a topical high-potency corticosteroid
D. an inhaled beta2-adrenergic agonist

14. Which strategy is effective in the treatment of acute asthma?

A. Stop exposure to latex
B. Inhaled beta2-adrenergic agonist
C. Place patient in supine position and elevate legs
D. Provide immediate oxygen, 2-4 L/min by nasal cannula

15. Which of the following medication is most critical when treating anaphylaxis?

A. Epinephrine, IM
B. Oral H1-receptor antagonist
C. An inhaled beta2-adrenergic agonist
D. Oxygen, 2-4 L/min by nasal cannula

16. Which condition decreases an OHCP susceptibility to opportunistic infections and reactivation of latent infections?

A. Immune deficiency
B. Immunosuppressive therapy
C. Chronic diseases
D. Younger age

17. Which administrative policies and work restrictions are inaccurate for OHCP exposed to or infected with a bloodborne pathogen?

A. Use graduated clinical privileges based on the transmission risk level associated with a procedure.
B. All clinical privileges are restricted when the OHCP has been diagnosed with a bloodborne pathogen.
C. Strategies should encourage routine voluntary, confidential testing and emphasize that OHCP who perform Category III procedures should know their immune or infection status.
D. OHCP who develop to HBV, HCV, and HIV infections are ethically bound to report it.

18. An OHCP can continue providing patient care while experiencing this type of acute infection:

A. Varicella (chicken pox)
B. Herpetic whitlows
C. Genital herpes
D. Tuberculosis

19. OHCP with a positive Mantoux tuberculin skin test (TST) are not infectious and, therefore, there are no associated work restrictions.

A. True
B. False

20. Which statement is inaccurate with respect to OHCP infected with the hepatitis A virus (HAV)?

A. The hepatitis A virus (HAV) is primarily transmitted by the fecal-oral route, either by person-to-person contact or consumption of contaminated food or water.
B. In oral healthcare settings, administrative policies and work restrictions are primarily predicated on its mode of transmission and the period of infectivity.
C. Infected OHCP should be restricted from patient contact, contact with patient's environment, and food-handling until 7 days after onset of jaundice.
D. HAV positive OHCP are unrestricted with regard to patient contact, patient's environment, and food-handling.

References

1. Centers for Disease Control and Prevention. Guidelines for Infection Control in Dental Health-Care Settings. 2003. MMWR 2003;52(No. RR-17):1-76.
2. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings. Am J Infect Control 2007;35:S65-164.
3. Henderson DK, Dembry L, Fishman NO, et al. SHEA guideline for management of healthcare workers who are infected with hepatitis B virus, hepatitis C virus, and/or human immunodeficiency virus. Infection control and hospital epidemiology, 2010 Mar; 31(3): 203-32.
4. Sussman GL, Beezhold DH, Kurup VP. Allergens and natural rubber proteins. J Allergy Clin Immunol 2002;110(2 Suppl):S33-S39.
5. Gawchik SM. Latex allergy, Mt Sinai J Med. 2011;78(5):759-72.
6. Nucera E, Aruanno A, Rizzi A, Centrone M. Latex Allergy: Current Status and Future Perspectives. J Asthma Allergy. 2020 Sep 28;13:385-398. doi: 10.2147/JAA.S242058. PMID: 33061465; PMCID: PMC7532063.
7. Critchley E, Pemberton MN. Latex and synthetic rubber glove usage in UK general dental practice: changing trends. Heliyon. 2020 May 5;6(5):e03889. doi: 10.1016/j.heliyon.2020.e03889. PMID: 32405551; PMCID: PMC7210590.
8. Ahmed DD, Sobczak SC, Yunginger JW. Occupational allergies caused by latex. Immunology Allergy Clin North Am 2003;23:205-19.
9. Spina A, Levine H. Latex allergy: A review for the dental professional. Oral Surg Oral Med Oral Pathol Oral Rad Endod 1999;87:5-11.
10. Farrell AL, Warshaw EM, Zhao Y, et al. Prevalence and methodology of evaluation for latex allergy among allergists in the United States: results of a cross-sectional survey. Am J Contact Dermat 2002;13:183-189.
11. Hamann CP, Turjanmaa K, Rietschel R, et al. Natural rubber latex hypersensitivity. Incidence and prevalence of type I allergy in the dental professional. J Am Dent Assoc 1998;129:43-54.
12. Hamann CP, Rodgers PA, Sullivan KM. Allergic contact dermatitis in dental professionals. Effective diagnosis and treatment. J Am Dent Assoc 2003;134:185-194.
13. Lieberman P, Nicklas RA, Oppenheimer J,et al. The diagnosis and management of anaphylaxis practice parameter: 2010 update. J Allergy Clin Immunol. 2010 Sep;126(3):477-80.e1-42.
14. Antezana M, Parker F. Occupational contact dermatitis. Immunol Allergy Clin North Am 2003;23:269-290.
15. Hamilton RG. Diagnosis of natural rubber latex allergy. Methods 2002;23:22-31.
16. Hamilton RG, Peterson EL, Ownby DR. Clinical and laboratory-based methods in the diagnosis of natural rubber latex allergy. J Allergy Clin Immunol 2002;110(2 Suppl):S47-S56.
17. Charous BL, Tarlo SM, Charous MA, et al. Natural rubber latex allergy in the occupational setting. Methods 2002;27:15-21.
18. Fish JE. Occupational asthma and rhinoconjunctivitis induced by natural rubber latex exposure. J Allergy Clin Immunol 2002;110(2 Suppl):S75-S81.
19. Fish JE. Occupational asthma and rhinoconjunctivitis induced by natural rubber latex exposure. J Allergy Clin Immunol 2002;110(2 Suppl):S75-S81.
20. Neugut AI, Ghatak AT, Miller RL. Anaphylaxis in the United States. An investigation into its epidemiology. Arch Intern Med 2001;161:15-21.
21. Lieberman P. Anaphylactic reactions during surgical and medical procedures. J Allergy Clin Immunol 2002;110(2 Suppl):S64-S9.
22. Porri F, Lemiere C, Birnbaum J, et al. Prevalence of latex sensitization in subjects attending health screening: implications for a perioperative screening. Clin Exp Allergy. 1997 Apr;27(4):413-417.
23. Taylor JS, Erkek E. Latex allergy: diagnosis and management. Dermatol Ther 2004;17:289-301.
24. Pumphrey RSH, Duddridge M, Norton J. Fatal latex allergy. J Allergy Clin Immunology 2001;107:558.

25. Fisher AA. Contact urticaria and anaphylactoid reactions to corn starch surgical glove powder. Contact Dermatitis 1987;16:224-225.
26. Wakelin SH, White IR. Natural rubber latex allergy. Clin Exp Dermatol. 1999 Jul;24(4):245-248.
27. Nettis E, Assennato G, Ferrannini A, et al. Type I allergy to natural rubber latex and type IV allergy to rubber chemical in healthcare workers with glove-related skin problems. Clin Exp Allergy 2002;32:441-447.
28. Nettis E, Assennato G, Ferrannini A, et al. Type I allergy to natural rubber latex and type IV allergy to rubber chemical in healthcare workers with glove-related skin problems. Clin Exp Allergy 2002;32:441-447.
29. Sicherer SH. Clinical implications of cross-reactive food allergens. J Allergy Clin Immunol 2001;108:881-890.
30. Pereira C, Tavares B, Loureiro G, et al. Turnip and zucchini: new foods in the latex-fruit syndrome. Allergy. 2007 Apr;62(4):452-3. doi: 10.1111/j.1398-9995.2006.01313.x. PMID: 17362260.
31. Hamilton RG, Adkinson NF Jr. Diagnosis of natural rubber latex allergy: multicenter latex skin testing efficacy study. Multicenter Latex Skin Testing Study Task Force. J Allergy Clin Immunol. 1998 Sep;102(3):482-490.
32. Sanchez-Monge R, Blanco C, Lopez-Torrejon G, et al. Differential allergen sensitization patterns in chestnut allergy with or without associated latex-fruit syndrome. J Allergy Clin Immunol 2006;118:705-s10.
33. T.R.U.E. test package insert. Accessed April 8, 2021.
34. Baur X, Chen Z, Allmers H. Can a threshold limit value for natural rubber latex airborne allergens be defined? J Allergy Clin Immuno 1998;101(1 Part 1):24-27.
35. Bernstein DI, Management of natural rubber latex allergy. J Allergy Clin Immunol 2002;110(2 Suppl):S111-S116.
36. Centers for Disease Control and Prevention. National Institute of Occupational Safety and Health. Preventing allergic reactions to natural rubber latex in the workplace. March 4, 2024.
37. Phillips V, Goodrich M, TJ S. Health Care Worker Disability Due to Latex Allergy and Asthma: A Cost Analysis. Am J Public Health 1999;89:1024-1028.
38. Tarlo SM, Easty A, Eubanks K, et al. Outcomes of a natural rubber latex control program in an Ontario teaching hospital. J Allergy Clin Immunol 2001;108(4):628-633.
39. Yunginger JW. Latex-associated anaphylaxis. Immunol Allergy Clin North Am 2001;21:669-677.
40. Smith AM, Amin HS, Biagini RE, et al. Percutaneous reactivity to natural rubber latex proteins persist in health-care workers following avoidance of natural rubber latex. Clin Exp Allergy 2007;37:1349-1356.
41. Drugs allergic disorders. Med Lett Drugs. Ther. 201 May;59(1520):71-80.
42. Drugs for asthma and COPD. Treat Guidel Med Lett. 2013 Aug;11(132):75-86.
43. An epinephrine prefilled syringe (Symjepi) for anaphylaxis. Med Lett Drugs Ther. 2019 Feb 25;61(1566):25-26. Corrected and republished in: JAMA. 2019 Apr 2;321(13):1306-1307.
44. Centers for Disease Control and Prevention. About Measles. February 22, 2024.
45. Centers for Disease Control and Prevention. About Mumps. February 22, 2024.
46. Centers for Disease Control and Prevention. About Rubella. February 22, 2024.
47. Centers for Disease Control and Prevention. End of the Federal COVID-19 Public Health Emergency (PHE) Declaration. Accessed March 9, 2024.
48. Centers for Disease Control and Prevention. Respiratory Virus Guidance. Accessed March 9, 2024.
49. Centers for Disease Control and Prevention. Interim U.S. Guidance for Risk Assessment and Work Restrictions for Healthcare Personnel with Potential Exposure to SARS-CoV-2. February 21, 2024.
50. Centers for Disease Control and Prevention. About Chickenpox. Accessed February 22, 2024.
51. Centers for Disease Control and Prevention. About Shingles (Herpes Zoster). Accessed February 22, 2024.

52. Centers for Disease Control and Prevention. Influenza (Flu). Information for Health Professionals. Accessed March 4, 2024.
53. Centers for Disease Control and Prevention. Pneumococcal Disease. Accessed March 4, 2024.
54. Centers for Disease Control and Prevention. Meningococcal Disease. Accessed February 22, 2024.
55. Centers for Disease Control and Prevention. Tuberculosis (TB). Accessed February 22, 2024.
56. Centers for Disease Control and Prevention. Hepatitis A FAQs for Health Professionals. Accessed February 22, 2024.

Additional Resources

- No Additional Resources Available

About the Authors

Michaell A. Huber, DDS

Professor
Department of Comprehensive Dentistry
UT Health San Antonio School of Dentistry, San Antonio, Texas

Dr. Michaell A. Huber is a Professor of Oral Medicine, Department of Comprehensive Dentistry, the UT Health School of Dentistry. He received his DDS from the UTHSCSA in 1980 and a Certificate in Oral Medicine from the National Naval Dental Center, Bethesda, Maryland in 1988. He is certified by the American Board of Oral Medicine. Dr. Huber served as Graduate Program Director in Oral Medicine at the National Naval Dental Center, Bethesda, Maryland. In addition he served as Specialty Leader for Oral Medicine to the Surgeon General of the United States Navy, Washington, DC; and Force Dental Officer, Naval Air Force Atlantic, Norfolk, Virginia.

Since joining the faculty in 2002, Dr. Huber has been teaching both pre-doctoral and graduate dental students at the UT Health School of Dentistry. In 2014, he was awarded the UTHSCSA Presidential Teaching Excellence Award. He is a Past President of the American Academy of Oral Medicine. Dr. Huber has spoken before many local, state, and national professional organizations. He has published over 70 journal articles, book chapters, and online postings.

Phone: (210) 567-3360
Fax: (210) 567-3334

Email: huberm@uthscsa.edu

Géza T. Terézhalmy, DDS, MA

Dr. Terézhalmy is Professor and Dean Emeritus, School of Dental Medicine, Case Western Reserve University. In addition, he is a Consultant, Naval Postgraduate Dental School, National Naval Medical Center. Dr. Terézhalmy earned a BS degree from John Carroll University; a DDS degree from Case Western Reserve University; an MA in Higher Education and Human Development from The George Washington University; and a Certificate in Oral Medicine from the National Naval Dental Center. Over the past 40+ years, Dr. Terézhalmy held more than 30 positions in professional societies, served as editor or contributing editor for several publications, co-authored or contributed chapters for several books, conducted oral healthcare related research, and had over 225 papers and abstracts published.

Email: gtt2@case.edu

Denise Kissell, BSDH, EFDA, MPH

Denise Kissell, BSDH, EFDA, MPH, is an Associate Clinical Professor at The Ohio State University College of Dentistry. Ms. Kissell received her Bachelor of Science in Dental Hygiene and her Master of Public Health degrees from The Ohio State University. She accepted a full-time faculty position in 2006, and directs courses for baccalaureate dental hygiene students, graduate dental hygiene students, and dental students. In addition, she is a practicing dental hygienist at the OSU Dental Faculty Practice and teaches continuing education courses for oral health professionals in the community. She serves as a member on national dental hygiene committees, including test construction committees for the National Board Dental Hygiene Examination (NBDHE).

Phone: (210) 567-3360
Fax: (210) 567-3334

Email: kissell.22@osu.edu