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California Infection Control

Dental Treatment of Patients with Mental Disorders

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CONTINUING EDUCATION FOR CALIFORNIA DENTAL HYGIENISTS AND ASSISTANTS 2025

Published by NetCE,
a TRC Healthcare Company
P.O. Box 997571
Sacramento, CA 95899
Tel: 800-232-4238 (within the U.S.)
916-783-4238 (outside the U.S.)
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The California Dental Practice Act

This course fulfills the California requirement for 2 hours of California Dental Practice Act education.

Audience
This course is designed for all California dentists, dental hygienists, and dental assistants in all practice settings.

Course Objective
The purpose of this course is to provide California dental professionals with a working knowledge of the contents of the California Dental Practice Act, ensuring that they practice legally and safely.

Learning Objectives
Upon completion of this course, you should be able to:

1. Define the scope of practice of dental professionals in California.
2. Describe the standards of licensure of and medication prescription by dental professionals in California.
3. Identify possible victims of violence or neglect and outline the appropriate response.

Faculty
Mark J. Szarejko, DDS, FAGD, received his dental degree from the State University of New York at Buffalo in 1985. He received fellowship from the Academy of General Dentistry in 1994.

Faculty Disclosure
Contributing faculty, Mark J. Szarejko, DDS, FAGD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

Senior Director of Development and Academic Affairs
Sarah Campbell

Director Disclosure
The director has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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This course meets the Dental Board of California's requirements for 2 units of continuing education.

Dental Board of California course #02-3841-00450.

Special Approval
This course fulfills the California requirement for 2 hours of Dental Practice Act education.

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INTRODUCTION

The California Dental Practice Act is the body of laws in the California Business and Professions Code (CBPC) and the California Code of Regulations (CCR) governing all dental professionals, including dentists, oral and maxillofacial surgeons, orthodontists, unlicensed dental assistants, registered dental assistants, and dental hygienists. The Act is intended to serve as a legal guideline for both professionals and the public regarding all aspects of dental practice. As defined in Section 1016.(b)1 of the CCR, continuing education on the California Dental Practice Act is required and must include instruction on utilization, scope of practice, prescribing laws, violations, citations, fines, licensure, the identification of abuse, and mandatory abuse reporting [1]. Of course, the Act is a much larger volume, so much so that it is beyond the scope of this course to elucidate every section. The Dental Practice Act is not intended to replace professional oaths and codes of ethics but does define actions and omissions that may lead to legal action and revocation of a license to practice dentistry in the State of California, the laws of which are continually evolving.

The Dental Board of California (a division of the California Department of Consumer Affairs), which consists of eight practicing dentists, one registered dental hygienist, one registered dental assistant (each practicing for at least five years), and five public members, is responsible for licensure of qualified dental health professionals, enforcement of the California Dental Practice Act, and improving the education of consumers and licensees [19]. The Board's highest priority is to protect the health and safety of the public.

In addition, the practice of dental hygiene is regulated by the Dental Hygiene Board of California, the first of its kind in the United States [20].

DENTISTRY DEFINED: SCOPE OF PRACTICE

According to the American Dental Association, dentistry is defined as "the evaluation, diagnosis, prevention, and treatment of diseases, disorders, and conditions of the oral cavity, the craniomaxillofacial area and the adjacent structures and their impact on the human body. This care is provided by dentists within the scope of their education, training and experience in accordance with the ethics of the profession and applicable law" [2]. The CBPC and the CCR provide specific information regarding utilization and scope of practice for dentists, unlicensed dental assistants, registered dental assistants, and registered dental hygienists, as evidenced in the following sections [1].

DENTISTS

CBPC Section 1625. Dentistry is the diagnosis or treatment, by surgery or other method, of diseases and lesions and the correction of malpositions of the human teeth, alveolar process, gums, jaws, or associated structures; and such diagnosis or treatment may include all necessary related procedures as well as the use of drugs, anesthetic agents, and physical evaluation. Without limiting the foregoing, a person practices dentistry within the meaning of this chapter who does any one or more of the following [24]:

(a) By card, circular, pamphlet, newspaper, Internet website, social media, or in any other way advertises themselves or represents themselves to be a dentist.

(b) Performs, or offers to perform, an operation or diagnosis of any kind, or treats diseases or lesions of the human teeth, alveolar process, gums, jaws, or associated structures, or corrects malposed positions thereof.

(c) In any way indicates that the person will perform by themselves or their agents or servants any operation upon the human teeth, alveolar process, gums, jaws, or associated structures, or in any way indicates that the person will construct, alter, repair, or sell any bridge, crown, denture or other prosthetic appliance or orthodontic appliance.

(d) Makes, or offers to make, an examination of, with the intent to perform or cause to be performed any operation on the human teeth, alveolar process, gums, jaws, or associated structures.

(e) Manages or conducts as manager, proprietor, conductor, lessor, or otherwise, a place where dental operations are performed.

The Board requires that dentists ensure that each patient of record receives a copy of the Dental Materials Fact Sheet (provided by the Board) prior to the placement of his or her first dental restoration [25]. The Dental Materials Fact Sheet details the comparative risks and benefits of available dental restorative materials. The patient must sign an acknowledgment of receipt of the fact sheet, and a copy of the acknowledgment must be placed in the patient's record.

DENTAL ASSISTANTS (UNLICENSED)

Although unlicensed dental assistants are not Board approved, their duties and actions are governed by the Act and they are required to complete coursework in the Dental Practice Act, infection control, and basic life support. Failure to follow the regulations set forth by California law can result in fines and/or imprisonment. As defined in CBPC Section 1750.(a), "A dental assistant is an individual who, without a license, may perform basic supportive dental procedures, as authorized by Section 1750.1 and by regulations adopted by the board, under the supervision of a licensed dentist" [1]. Basic supportive dental procedures are those procedures that have technically elementary characteristics, are completely reversible, and are unlikely to precipitate potentially hazardous conditions for the patient being treated. A licensed dentist is responsible for assuring unlicensed dental assistants' competence and ensuring that they complete required coursework (e.g., two-hour Dental Practice Act, eight-hour infection control, basic life support) and maintain certification in basic life support (if employed for longer than 120 days). Specific duties pertaining to dental assistant practice can be found in CCR Section 1085 [28]. General information regarding regulations pertaining to dental assistants is located in CBPC Sections 1740–1777; although these sections are not discussed in this course, they should be periodically reviewed to ensure self-compliance with the act. The CBPC may include additional duties for various dental assistant professions.

CCR Section 1085. Dental Assistant Duties and Settings.

(a) Unless specifically so provided by regulation, a dental assistant may not perform the following functions or any other activity which represents the practice of dentistry or requires the knowledge, skill and training of a licensed dentist:
   1. Diagnosis and treatment planning;
   2. Surgical or cutting procedures on hard or soft tissue;
   3. Fitting and adjusting of correctional and prosthodontic appliances;
   4. Prescription of medicines;
   5. Placement, condensation, carving or removal of permanent restorations, including final cementation procedures;
   6. Irrigation and medication of canals, try-in cones, reaming, filing or filling of root canals;
   7. Taking of impressions for prosthodontic appliances, bridges or any other structures which may be worn in the mouth;
   8. Administration of injectable and/or general anesthesia;
   9. Oral prophylaxis procedures.

(b) A dental assistant may perform such basic supportive dental procedures as the following under the general supervision of a licensed dentist:
   1. Extra-oral duties or functions specified by the supervising dentist;
   2. Operation of dental radiographic equipment for the purpose of oral radiography if the dental assistant has complied with the requirements of section 1656 of the Code;
   3. Examine orthodontic appliances.

(c) A dental assistant may perform such basic supportive dental procedures as the following under the direct supervision of a licensed dentist when done so pursuant to the order, control and full professional responsibility of the supervising dentist. Such procedures shall be checked and approved by the supervising dentist prior to dismissal of the patient from the office of said dentist.

1. Take impressions for diagnostic and opposing models, bleaching trays, temporary crowns and bridges, and sports guards;
2. Apply non-aerosol and non-caustic topical agents;
3. Remove post-extraction and periodontal dressings;
4. Placement of elastic orthodontic separators;
5. Remove orthodontic separators;
6. Assist in the administration of nitrous oxide analgesia or sedation; however, a dental assistant shall not start the administration of the gases and shall not adjust the flow of the gases unless instructed to do so by the dentist who shall be present at the patient's chairside at the implementation of these instructions. This regulation shall not be construed to prevent any person from taking appropriate action in the event of a medical emergency.
7. Hold anterior matrices;
8. Remove sutures;
9. Take intra-oral measurements for orthodontic procedures;
10. Seat adjusted retainers or headgears, including appropriate instructions;
11. Check for loose bands;
12. Remove arch wires;
13. Remove ligature ties;
14. Apply topical fluoride, after scaling and polishing by the supervising dentist or a registered dental hygienist;
15. Place and remove rubber dams;
16. Place, wedge and remove matrices;
17. Cure restorative or orthodontic materials in operative site with light-curing device.

For the purpose of this section, a supervising licensed dentist is defined as a dentist whose patient is receiving the services of a dental assistant in the treatment facility and is under the direct control of said licensed dentist [1]. Direct supervision is defined as supervision of dental procedures based on instructions given by a licensed dentist who must be physically present in the facility when the procedures are performed.

REGISTERED DENTAL ASSISTANTS

Registered dental assistants (RDAs) are Board-licensed professionals who may perform a greater range of duties than unlicensed dental assistants. Specific information pertaining to RDAs' scope of practice can be found in CCR Section 1086, and general information regarding regulations pertaining to RDAs is located in CBPC Sections 1740–1777, which should be reviewed periodically to ensure self-compliance with the act [28].

CCR Section 1086. RDA Duties and Settings.

(a) Unless specifically so provided by regulation, the prohibitions contained in section 1085 of these regulations apply to registered dental assistants.

(b) A registered dental assistant may perform all functions which may be performed by a dental assistant.

(c) Under general supervision, a registered dental assistant may perform the following duties:

1. Mouth-mirror inspection of the oral cavity, to include charting of obvious lesions, existing restorations and missing teeth;
2. Placement and removal of temporary sedative dressings.

(d) A registered dental assistant may perform the following procedures under the direct supervision of a licensed dentist when done so pursuant to the order, control and full professional responsibility of the supervising dentist. Such procedures shall be checked and approved by the supervising dentist prior to dismissal of the patient from the office of said dentist.

1. Obtain endodontic cultures;
2. Dry canals, previously opened by the supervising dentist, with absorbent points;
3. Test pulp vitality;
4. Place bases and liners on sound dentin;
5. Remove excess cement from supragingival surfaces of teeth with a hand instrument or floss;
6. Size stainless steel crowns, temporary crowns and bands;
7. Fabrication of temporary crowns intra-orally;
8. Temporary cementation and removal of temporary crowns and removal of orthodontic bands;
9. Placement of orthodontic separators;
10. Placement and ligation of arch wires;
11. Placement of post-extraction and periodontal dressings;
12. Apply bleaching agents;
13. Activate bleaching agents with non-laser light-curing device;
14. Take bite registrations for diagnostic models for case study only;
15. Coronal polishing (Evidence of satisfactory completion of a board-approved course of instruction in this function must be submitted to the board prior to any performance thereof).

    This procedure shall not be intended or interpreted as a complete oral prophylaxis (a procedure which can be performed only by a licensed dentist or registered dental hygienist). A licensed dentist or registered dental hygienist shall determine that the teeth to

be polished are free of calculus or other extraneous material prior to coronal polishing.

16. Removal of excess cement from coronal surfaces of teeth under orthodontic treatment by means of an ultrasonic scaler. (Evidence of satisfactory completion of a board-approved course of instruction or equivalent instruction in an approved RDA program in this function must be submitted to the board prior to any performance thereof.)

(e) Settings. Registered dental assistants may undertake the duties authorized by this section in a treatment facility under the jurisdiction and control of the supervising licensed dentist, or in an equivalent facility approved by the board.

Registered Dental Assistants in Extended Functions

Registered dental assistants in extended functions (RDAEFs) are Board-licensed dental professionals who have a greater breadth of permitted duties than RDAs. Specifics regarding these allowed duties can be found in CCR Section 1087 [28].

CCR Section 1087. RDAEF Duties and Settings.

(a) Unless specifically so provided by regulation, the prohibitions contained in Section 1085 apply to RDAEFs.

(b) An RDAEF may perform all duties assigned to dental assistants and registered dental assistants.

(c) An RDAEF may perform the procedures set forth below under the direct supervision of a licensed dentist when done so pursuant to the order, control and full professional responsibility of the supervising dentist. Such procedures shall be checked and approved by the supervising dentist prior to dismissal of the patient from the office of said dentist.

1. Cord retraction of gingivae for impression procedures;
2. Take impressions for cast restorations;
3. Take impressions for space maintainers, orthodontic appliances, and occlusal guards;
4. Prepare enamel by etching for bonding;
5. Formulate indirect patterns for endodontic post and core castings;
6. Fit trial endodontic filling points;
7. Apply pit and fissure sealants;
8. Remove excess cement from subgingival tooth surfaces with a hand instrument;
9. Apply etchant for bonding restorative materials.

(d) Settings. Registered dental assistants in extended functions may undertake the duties authorized by this section in a treatment facility under the jurisdiction and control of the supervising licensed dentist, or in an equivalent facility approved by the board.

In addition to the duties outlined in CCR section 1087, section 1753.5 of the CBPC states that RDAEFs may conduct preliminary evaluation of the patient's oral health, including, but not limited to, charting, intraoral and extra-oral evaluation of soft tissue, classifying occlusion, and myofunctional evaluation, and perform oral health assessments in school-based, community health project settings under the direction of a dentist, registered dental hygienist, or registered dental hygienist in alternative practice [1]. RDAEFs may hold an orthodontic assistant permit, a dental sedation assistant permit, or both.

DENTAL HYGIENISTS

Registered dental hygienists (RDHs), registered dental hygienists in extended functions (RDHEFs), and registered dental hygienists in alternative practice (RDHAPs) are Board-licensed occupations administered by the Dental Hygiene Committee of California, and the California Dental Practice Act contains the main body of laws and regulations that govern their practice.

The Dental Hygiene Committee of California was created by the Board and consists of seven governor-appointed positions: two public members, four dental hygienists, and one practicing dentist; in addition, there are two public members appointed by the Senate Committee on Rules and the Speaker of the Assembly, respectively [20]. Responsibilities of the Dental Hygiene Committee include adopting regulations; issuing, reviewing, and revoking licenses; developing and administering examinations; determining fees; and updating continuing education requirements for all dental hygiene licensure categories. The Act contains specific information regarding the permitted duties and settings of RDH practice (CCR Section 1088), RDHEF practice (CCR Section 1089), and RDHAP practice (CCR Section 1090) [28]. Additional laws and regulations pertaining specifically to dental hygiene practice are located in CBPC Sections 1900–1966.6. These sections should be periodically reviewed to ensure self-compliance with the Act.

Registered Dental Hygienists

CCR Section 1088. RDH Duties and Settings.

(a) Unless specifically so provided by regulation, the prohibition contained in Section 1085(a), subsections (1) through (8) of these regulations shall apply to duties performed by a registered dental hygienist.

(b) A registered dental hygienist may perform all duties assigned to dental assistants and registered dental assistants, under the supervision of a licensed dentist as specified in these regulations.

(c) Under general supervision, a registered dental hygienist may perform the following duties in addition to those provided by Section 1760(b) of the Code:

1. Root planing;
2. Polish and contour restorations;
3. Oral exfoliative cytology;
4. Apply pit and fissure sealants;

5. Preliminary examination, including but not limited to:
   A. Periodontal charting;
   B. Intra and extra-oral examination of soft tissue;
   C. Charting of lesions, existing restorations and missing teeth;
   D. Classifying occlusion;
   E. Myofunctional evaluation.
6. Irrigate sub-gingivally with an antimicrobial and/or antibiotic liquid solution(s).
7. The following direct supervision duties of dental assistants and registered dental assistants:
   A. Dental Assistant.
      1. Taking impressions for diagnostic and opposing models;
      2. Applying non-aerosol and non-caustic topical agents;
      3. Removing post-extraction and periodontal dressings;
      4. Removing sutures;
      5. Taking intra-oral measurements for orthodontic procedures;
      6. Checking for loose bands;
      7. Removing ligature ties;
      8. Applying topical fluoride;
      9. Placing elastic separators.
   B. Registered Dental Assistant
      1. Test pulp vitality;
      2. Removing excess cement from supragingival surfaces of teeth;
      3. Sizing stainless steel crowns, temporary crowns and bands;
      4. Temporary cementation and removal of temporary crowns and removal of orthodontic bands;
      5. Placing post-extraction and periodontal dressings.

(d) A registered dental hygienist may perform the procedures set forth below under the direct supervision of a licensed dentist when done so pursuant to the order, control and full professional responsibility of the supervising dentist. Such procedures shall be checked and approved by the supervising dentist prior to dismissal of the patient from the office of said dentist.
   1. Placement of antimicrobial or antibiotic medicaments which do not later have to be removed;
   2. All duties so assigned to a dental assistant or a registered dental assistant, unless otherwise indicated;
   3. Periodontal soft tissue curettage (Evidence of satisfactory completion of a board-approved course of instruction in this function must be submitted to the board prior to any performance thereof);
   4. Administration of local anesthetic agents, infiltration and conductive, limited to the oral cavity (Evidence of satisfactory completion of a board-approved course of instruction in this function must be submitted to the board prior to any performance thereof);
   5. Administration of nitrous oxide and oxygen when used as an analgesic, utilizing fail-safe type machines containing no other general anesthetic agents. (Evidence of satisfactory completion of a board-approved course of instruction in this function must be submitted to the board prior to any performance thereof.)

(e) A registered dental hygienist may undertake the duties authorized by this section in the following settings, provided the appropriate supervision requirements are met:
   1. The treatment facility of a licensed dentist;
   2. Licensed health facilities as defined in Section 1250 of the Health and Safety Code,
   3. Licensed clinics as defined in Section 1203 of the Health and Safety Code,
   4. Licensed community care facilities as defined in Section 1502 of the Health and Safety Code,
   5. Schools of any grade level whether public or private,
   6. Public institutions, including but not limited to federal, state and local penal and correctional facilities.
   7. Mobile units operated by a public or governmental agency or a nonprofit and charitable organization approved by the board; provided, however, that the mobile unit meets the statutory and regulatory requirements for mobile units,
   8. Home of a non-ambulatory patient, provided there is a written note from a physician or registered nurse stating that the patient is unable to visit a dental office.
   9. Health fairs or similar non-profit community activities. Each such fair or activity shall be approved by the board.

Any other facility must be approved by the board.

Registered Dental Hygienists in Extended Functions

CCR Section 1089. RDHEF Duties and Settings.

(a) Unless specifically provided by regulation, the prohibitions contained in Section 1085(a) (1) through (8) shall apply to RDHEFs.

(b) An RDHEF may perform all duties assigned to dental assistants, registered dental assistants and registered dental hygienists.

(c) An RDHEF may perform the procedures set forth below under the direct supervision of a licensed dentist when done so pursuant to the order, control and full professional responsibility of the supervising dentist. Such procedures shall be checked and approved by the supervising dentist prior to dismissal of the patient from the office of said dentist.

1. Cord retraction of gingivae for impression procedures;
2. Take impressions for cast restorations;
3. Take impressions for space maintainers, orthodontic appliances and guards;
4. Prepare enamel by etching for bonding;
5. Formulate indirect patterns for endodontic post and core castings;
6. Fit trial endodontic filling points;
7. Apply etchant for bonding restorative materials.

(d) Settings. Registered dental hygienists in extended functions may undertake the duties authorized by this section in a treatment facility under the jurisdiction and control of the supervising licensed dentist, or an equivalent facility approved by the Board.

Registered Dental Hygienists in Alternative Practice

CCR Section 1090. RDHAP Duties and Settings.

(a) Unless specifically so provided by regulation, an RDHAP may not perform the following functions or any activity which represents the practice of dentistry or requires knowledge, skill and training of a licensed dentist:

1. Diagnosing and treatment planning;
2. Surgical or cutting procedures on hard or soft tissue;
3. Fitting and adjusting of correctional and prosthodontic appliances;
4. Prescribing medication;
5. Placing, condensing, carving or removal of permanent restorations, including final cementation procedures;
6. Irrigating and medicating canals, try-in cones, reaming, filing or filling of root canals;
7. Taking of impressions for prosthodontic appliances, bridges, or any other devices which may be worn in the mouth;
8. Administering local or general anesthesia, oral or parental conscious sedation.

(b) Under the supervision of a licensed dentist, an RDHAP may perform the duties assigned to registered dental hygienists by Section 1088, under the same levels of supervision and in the same settings as specified in that section, in addition to those duties permitted by Section 1768(b)(3).

(c) Independently and without the supervision of a licensed dentist, an RDHAP may, upon the prescription of a dentist or a physician and surgeon licensed in California, perform the duties assigned to a registered dental hygienist by Section 1088(c).

1. All prescriptions shall contain the following information:
   A. The pre-printed name, address, license number, and signature of the prescribing dentist or physician and surgeon.
   B. The name, address and phone number of the patient.
   C. The date the services are prescribed and the expiration date of the prescription. The prescription shall be for dental hygiene services and, if necessary, include special instructions for the care of that patient.

Prior to the establishment of an independent practice, an RDHAP shall provide to the board documentation of an existing relationship with at least one dentist for referral, consultation, and emergency services [1].

LICENSURE

All individuals practicing dentistry in California, with the exception of unlicensed dental assistants, must hold a current, valid license issued by the Board; California does not grant reciprocity with other states or nations. The Act requires that dental professionals meet certain education requirements, submit the correct applications and fees, pass the appropriate examinations, and submit a set of fingerprints. Fingerprinting is also required for license renewal if not previously conducted by the California Department of Justice (DOJ) or if records no longer exist [21]. Fingerprinting within California must be conducted using the DOJ Live Scan system; fingerprint records from other institutions (e.g., Department of Motor Vehicles) are not suitable, although ink-on-card fingerprints made at a law enforcement agency are acceptable if unable to travel to California. The required fingerprint cards must be requested from the Dental Board by phone or email [21]. The fingerprints will be used to conduct a criminal history record check and a state and federal level criminal offender record information search.

Issuance, review, and revocation of RDH/RDHEF/RDHAP licenses and the development and administration of license examinations for these auxiliaries are handled by the Dental Hygiene Board of California. All other licensure, including that for RDAs/RDAEFs, is handled by the Dental Board (despite the existence of the Dental Assisting Council, whose purpose is to consider matters related to dental assisting practice and make recommendations to the board). Complaints, investigations, and enforcement are handled by either the Dental Hygiene

Board or the Dental Board, according to profession, but the governing regulations and laws set forth in the California Dental Practice Act pertain to all dental professionals. Information about application for licensure to practice as a dentist or dental auxiliary can be found in CCR Section 1028 and CCR Sections 1076–1079.3, respectively. Specific information about the licensure application requirements and process for dentists and dental assistants can be found at https://www.dbc.ca.gov/applicants and for hygienists at https://www.dhbc.ca.gov/applicants.

Effective July 2012, application for licensure may be denied based on delinquent state tax payments [1]. Similarly, current licenses/certifications/registrations may be revoked for failure to pay taxes.

LICENSE RENEWAL

Licenses for all dental professions must be renewed every two years before the last day of the professional's birth month. Practicing without renewing after this date is considered practicing without a license [1]. It is required that dentists have completed 50 hours of continuing education and dental auxiliaries (excluding RDHAPs) have completed 25 hours of continuing education (maximum of 25 hours and 12.5 hours of home study, respectively) upon renewal submission. The continuing education requirement is 35 hours for RDHAPs. Coursework regarding the Dental Practice Act, infection control, and basic life support is mandatory every two years for all licensees. To receive credit, all courses must be from Board-approved providers. In addition, the Board has identified topics that may only constitute a portion of the full continuing education requirement or that are not acceptable at all. A complete listing of allowable and non-allowable courses is available on the Board website.

Links to information regarding license renewal for dentists and dental assistants can be found at https://www.dbc.ca.gov/licensees, and renewal information for hygienists can be found at https://www.dhbc.ca.gov/licensees/renewals.

ACTS LEADING TO SUSPENSION OF A LICENSE AND IN VIOLATION OF THE DENTAL PRACTICE ACT

Violations of the Act by Board licensees are grounds for suspension of a license/certification and are handled by the Board's Enforcement Program, which is composed of five sections: Complaint and Compliance Unit; Inspections/Probation Section; Investigation Unit: Sworn Investigators; Investigation Analysis Unit; and Discipline Coordination Unit [22]. Complaints originate from many sources, including dental professionals, healthcare providers, insurance companies, law enforcement agencies, and patients. Complaint intake specialists route these to the appropriate section; for example, an allegation of an unsafe or unsanitary office condition is routed to the inspection section, whereby Board enforcement inspectors may be sent out and are authorized to issue citations and fines. In addition to Board enforcement action, other law enforcement or regulatory agencies are involved when indicated [1]. Dental professionals placed on probation status by the Board for violations of the Act are monitored by the Enforcement Program's Probation Unit. The Board's Enforcement Unit may be contacted by phone at (916) 263-2300 or by e-mail at DentalBoardComplaints@dca.ca,gov. Violations of the Act by hygienists are handled by the Hygiene Board's Complaint Unit, which operates in a similar manner and can be contacted at (866) 810-9899 or by email at DHBCEnforcement@dca.ca.gov [20].

According to CBPC Section 1670.1, conviction of crimes committed by dental professionals outside of the workplace may also be grounds for Board discipline and can impact licensure status if the crime is "substantially related to the qualifications, functions, or duties of a dentist or dental assistant licensed under this chapter" [1]. These vary considerably on a case-by-case basis. Various lesser convictions, for example, driving under the influence (DUI), illicit drug possession, and prescription drug diversion, may not necessarily lead to license revocation provided the proper steps are taken toward remediation (e.g., entering the Board diversion program, submitting to periodic drug testing) [23]. In general, convictions for assaults, sex crimes, multiple misdemeanors (e.g., second DUI/controlled substance charge), and other egregious violations constitute a basis for denial or revocation of licenses or certifications. In addition to violations outside the workplace, unprofessional conduct, in its many forms, is grounds for Board Enforcement action. Acts and omissions that characterize unprofessional conduct are covered extensively in CBPC Sections 1680, 1681, and 1682 and CCR Section 1018.05.

CBPC Section 1680. Unprofessional conduct by a person licensed under this chapter is defined as, but is not limited to, any one of the following:

(a) The obtaining of any fee by fraud or misrepresentation.

(b) The employment directly or indirectly of any student or suspended or unlicensed dentist to practice dentistry as defined in this chapter.

(c) The aiding or abetting of any unlicensed person to practice dentistry.

(d) The aiding or abetting of a licensed person to practice dentistry unlawfully.

(e) The committing of any act or acts of sexual abuse, misconduct, or relations with a patient that are substantially related to the practice of dentistry.

(f) The use of any false, assumed, or fictitious name, either as an individual, firm, corporation, or otherwise, or any name other than the name under which the person is licensed to practice, in advertising or in any other manner indicating that the person is practicing or will practice dentistry, except that name as is specified in a valid permit issued pursuant to Section 1701.5.

(g) The practice of accepting or receiving any commission or the rebating in any form or manner of fees for professional services, radiograms, prescriptions, or other services or articles supplied to patients.

(h) The making use by the licensee or any agent of the licensee of any advertising statements of a character tending to deceive or mislead the public.

(i) The advertising of either professional superiority or the advertising of performance of professional services in a superior manner. This subdivision shall not prohibit advertising permitted by subdivision (h) of Section 651.

(j) The employing or the making use of solicitors.

(k) The advertising in violation of Section 651.

(l) The advertising to guarantee any dental service, or to perform any dental operation painlessly. This subdivision shall not prohibit advertising permitted by Section 651.

(m) The violation of any of the provisions of law regulating the procurement, dispensing, or administration of dangerous drugs, as defined in Chapter 9 (commencing with Section 4000) or controlled substances, as defined in Division 10 (commencing with Section 11000) of the Health and Safety Code.

(n) The violation of any of the provisions of this division.

(o) The permitting of any person to operate dental radiographic equipment who has not met the requirements of Section 1656.

(p) The clearly excessive prescribing or administering of drugs or treatment, or the clearly excessive use of diagnostic procedures, or the clearly excessive use of diagnostic or treatment facilities, as determined by the customary practice and standards of the dental profession. Any person who violates this subdivision is guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars ($100) or more than six hundred dollars ($600), or by imprisonment for a term of not less than 60 days or more than 180 days, or by both a fine and imprisonment.

(q) The use of threats or harassment against any patient or licensee for providing evidence in any possible or actual disciplinary action, or other legal action; or the discharge of an employee primarily based on the employee's attempt to comply with the provisions of this chapter or to aid in the compliance.

(r) Suspension or revocation of a license issued, or discipline imposed, by another state or territory on grounds that would be the basis of discipline in this state.

(s) The alteration of a patient's record with intent to deceive.

(t) Unsanitary or unsafe office conditions, as determined by the customary practice and standards of the dental profession.

(u) The abandonment of the patient by the licensee, without written notice to the patient that treatment is to be discontinued and before the patient has ample opportunity to secure the services of another dentist, registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions and provided the health of the patient is not jeopardized.

(v) The willful misrepresentation of facts relating to a disciplinary action to the patients of a disciplined licensee.

(w) Use of fraud in the procurement of any license issued pursuant to this chapter.

(x) Any action or conduct that would have warranted the denial of the license.

(y) The aiding or abetting of a licensed dentist, dental assistant, registered dental assistant, registered dental assistant in extended functions, dental sedation assistant permitholder, orthodontic assistant permitholder, registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions to practice dentistry in a negligent or incompetent manner.

(z) 1. The failure to report to the board in writing within seven days any of the following: (A) the death of the licensee's patient during the performance of any dental or dental hygiene procedure; (B) the discovery of the death of a patient whose death is related to a dental or dental hygiene procedure performed by the licensee; or (C) except for a scheduled hospitalization, the removal to a hospital or emergency center for medical treatment of any patient to whom oral conscious sedation, conscious sedation, or general anesthesia was administered, or any patient as a result of dental or dental hygiene treatment. With the exception of patients to whom oral conscious sedation, conscious sedation, or general anesthesia was administered, removal to a hospital or emergency center that is the normal or expected treatment for the underlying dental condition is not required to be reported. Upon receipt of a report pursuant to this subdivision the board may conduct an inspection of the dental office if the board finds that it is necessary. A dentist shall report to the board all deaths occurring in the licensee's practice with a copy sent to the Dental Hygiene Board of California if the death was the result of treatment by a registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions. A registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions shall report to the Dental Hygiene Board of California all deaths occurring as the result of dental hygiene treatment, and a copy of the notification shall be sent to the board.

2. The report required by this subdivision shall be on a form or forms approved by the board. The form or forms approved by the board shall require the licensee to include, but not be limited to, the following information for cases in which patients received anesthesia: the date of the procedure; the patient's age in years and months, weight, and sex; the patient's American Society of Anesthesiologists

(ASA) physical status; the patient's primary diagnosis; the patient's coexisting diagnoses; the procedures performed; the sedation setting; the medications used; the monitoring equipment used; the category of the provider responsible for sedation oversight; the category of the provider delivering sedation; the category of the provider monitoring the patient during sedation; whether the person supervising the sedation performed one or more of the procedures; the planned airway management; the planned depth of sedation; the complications that occurred; a description of what was unexpected about the airway management; whether there was transportation of the patient during sedation; the category of the provider conducting resuscitation measures; and the resuscitation equipment utilized. Disclosure of individually identifiable patient information shall be consistent with applicable law. A report required by this subdivision shall not be admissible in any action brought by a patient of the licensee providing the report.

3. For the purposes of paragraph (2), categories of provider are: General Dentist, Pediatric Dentist, Oral Surgeon, Dentist Anesthesiologist, Physician Anesthesiologist, Dental Assistant, Registered Dental Assistant, Dental Sedation Assistant, Registered Nurse, Certified Registered Nurse Anesthetist, or Other.
4. The form shall state that this information shall not be considered an admission of guilt, but is for educational, data, or investigative purposes.
5. The board may assess a penalty on any licensee who fails to report an instance of an adverse event as required by this subdivision. The licensee may dispute the failure to file within 10 days of receiving notice that the board had assessed a penalty against the licensee.

(aa) Participating in or operating any group advertising and referral services that are in violation of Section 650.2.

(ab) The failure to use a fail-safe machine with an appropriate exhaust system in the administration of nitrous oxide. The board shall, by regulation, define what constitutes a fail-safe machine.

(ac) Engaging in the practice of dentistry with an expired license.

(ad) Except for good cause, the knowing failure to protect patients by failing to follow infection control guidelines of the board, thereby risking transmission of bloodborne infectious diseases from dentist, dental assistant, registered dental assistant, registered dental assistant in extended functions, dental sedation assistant permitholder, orthodontic assistant permitholder, registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions to patient, from patient to patient, and from patient to dentist, dental assistant, registered dental assistant, registered dental assistant in extended functions, dental sedation assistant permitholder, orthodontic assistant permitholder, registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions. In administering this subdivision, the board shall consider referencing the standards, regulations, and guidelines of the State Department of Public Health developed pursuant to Section 1250.11 of the Health and Safety Code and the standards, guidelines, and regulations pursuant to the California Occupational Safety and Health Act of 1973 (Part 1 (commencing with Section 6300) of Division 5 of the Labor Code) for preventing the transmission of HIV, hepatitis B, and other bloodborne pathogens in health care settings. The board shall review infection control guidelines, if necessary, on an annual basis and proposed changes shall be reviewed by the Dental Hygiene Board of California to establish a consensus. The Board shall submit any recommended changes to the infection control guidelines for review to establish a consensus. As necessary, the board shall consult with the Medical Board of California, the California Board of Podiatric Medicine, the Board of Registered Nursing, and the Board of Vocational Nursing and Psychiatric Technicians, to encourage appropriate consistency in the implementation of this subdivision.

The board shall seek to ensure that all appropriate dental personnel are informed of the responsibility to follow infection control guidelines, and of the most recent scientifically recognized safeguards for minimizing the risk of transmission of bloodborne infectious diseases.

(ae) The utilization by a licensed dentist of any person to perform the functions of any registered dental assistant, registered dental assistant in extended functions, dental sedation assistant permitholder, orthodontic assistant permitholder, registered dental hygienist, registered dental hygienist in alternative practice, or registered dental hygienist in extended functions who, at the time of initial employment, does not possess a current, valid license or permit to perform those functions.

(af) The prescribing, dispensing, or furnishing of dangerous drugs or devices, as defined in Section 4022, in violation of Section 2242.1.

(ag) Using water, or other methods used for irrigation, that are not sterile or that do not contain recognized disinfecting or antibacterial properties when performing dental procedures on exposed dental pulp.

(ah) The failure by the treating dentist, prior to the initial diagnosis and correction of malpositions of human teeth or initial use of orthodontic appliances, to perform an examination pursuant to subdivision (b) of Section 1684.5, including the review of the patient's most recent diagnostic digital or conventional radiographs or other equivalent bone imaging suitable for orthodontia. New

radiographs or other equivalent bone imaging shall be ordered if deemed appropriate by the treating dentist.

Section 1681. In addition to other acts constituting unprofessional conduct within the meaning of this chapter, it is unprofessional conduct for a person licensed under this chapter to do any of the following:

(a) Obtain or possess in violation of law, or except as directed by a licensed physician and surgeon, dentist, or podiatrist, administer to himself, any controlled substance, as defined in Division 10 (commencing with Section 11000) of the Health and Safety Code, or any dangerous drug as defined in Article 8 (commencing with Section 4211) of Chapter 9.

(b) Use any controlled substance, as defined in Division 10 (commencing with Section 11000) of the Health and Safety Code, or any dangerous drug as defined in Article 8 (commencing with Section 4211) of Chapter 9, or alcoholic beverages or other intoxicating substances, to an extent or in a manner dangerous or injurious to himself, to any person, or the public to the extent that such use impairs his ability to conduct with safety to the public the practice authorized by his license.

(c) The conviction of a charge of violating any federal statute or rules, or any statute or rule of this state, regulating controlled substances, as defined in Division 10 (commencing with Section 11000) of the Health and Safety Code, or any dangerous drug, as defined in Article 8 (commencing with Section 4211) of Chapter 9, or the conviction of more than one misdemeanor, or any felony, involving the use or consumption of alcohol or drugs, if the conviction is substantially related to the practice authorized by his license. The record of conviction or certified copy thereof, certified by the clerk of the court or by the judge in whose court the conviction is had, shall be conclusive evidence of a violation of this section; a plea or verdict of guilty or a conviction following a plea of *nolo contendere* is deemed to be a conviction within the meaning of this section; the board may order the license suspended or revoked, or may decline to issue a license, when the time for appeal has elapsed or the judgment of conviction has been affirmed on appeal, or when an order granting probation is made suspending imposition of sentence, irrespective of a subsequent order under any provision of the Penal Code, including, but not limited to, Section 1203.4 of the Penal Code, allowing such person to withdraw his plea of guilty and to enter a plea of not guilty, or setting aside the verdict of guilty, or dismissing the accusation, information or indictment.

Section 1682. In addition to other acts constituting unprofessional conduct under this chapter, it is unprofessional conduct for:

(a) Any dentist performing dental procedures to have more than one patient undergoing moderate sedation, deep sedation, or general anesthesia on an outpatient basis at any given time unless each patient is being continuously monitored on a one-to-one ratio while sedated by either the dentist or another licensed health professional authorized by law to administer moderate sedation, deep sedation, or general anesthesia.

(b) Any dentist with patients recovering from moderate sedation, deep sedation, or general anesthesia to fail to have the patients closely monitored by licensed health professionals experienced in the care and resuscitation of patients recovering from moderate sedation, deep sedation, or general anesthesia. If one licensed professional is responsible for the recovery care of more than one patient at a time, all of the patients shall be physically in the same room to allow continuous visual contact with all patients and the patient to recovery staff ratio should not exceed three to one.

(c) Any dentist with patients who are undergoing deep sedation, general anesthesia, or moderate sedation to fail to have these patients continuously monitored during the dental procedure with a pulse oximeter or similar or superior monitoring equipment and ventilation continuously monitored using at least two of the three following methods:

1. Auscultation of breath sounds using a precordial stethoscope.
2. Monitoring for the presence of exhaled carbon dioxide with capnography.
3. Verbal communication with a patient under moderate sedation. This method shall not be used for a patient under deep sedation or general anesthesia.

(d) Any dentist with patients who are undergoing moderate sedation to have dental office personnel directly involved with the care of those patients who are not certified in basic cardiac life support (CPR) and recertified biennially.

(e) 1. Any dentist to fail to obtain the written informed consent of a patient prior to administering moderate sedation, deep sedation, general anesthesia. In the case of a minor, the consent shall be obtained from the child's parent or guardian.

2. The written informed consent for general anesthesia, in the case of a minor, shall include, but not be limited to, the following information:

"The administration and monitoring of deep sedation or general anesthesia may vary depending on the type of procedure, the type of practitioner, the age and health of the patient, and the setting in which anesthesia is provided. Risks may vary with each specific situation. You are encouraged to explore all the options available for your child's anesthesia for their dental treatment, and consult with your dentist, family physician, or pediatrician as needed."

3. Nothing in this subdivision shall be construed to establish the reasonable standard of care for administering or monitoring oral moderate sedation, moderate sedation, deep sedation, or general anesthesia.

Section 1683. (a) Every dentist, dental health professional, or other licensed health professional who performs a service on a patient in a dental office shall identify himself or herself in the patient record by signing his or her name, or an identification number and initials, next to the service performed and shall date those treatment entries in the record. Any person licensed under this chapter who owns, operates, or manages a dental office shall ensure compliance with this requirement.

(b) Repeated violations of this section constitute unprofessional conduct.

Section 1683.1 (a) Any individual, partnership, corporation, or other entity that provides dental services through telehealth shall make available the name, telephone number, practice address, and California state license number of any dentist who will be involved in the provision of services to a patient prior to the rendering of services and when requested by a patient.

(b) A violation of this section shall constitute unprofessional conduct.

Section 1684. In addition to other acts constituting unprofessional conduct under this chapter, it is unprofessional conduct for a person licensed under this chapter to perform, or hold himself or herself out as able to perform, professional services beyond the scope of his or her license and field or fields of competence as established by his or her education, experience, training, or any combination thereof. This includes, but is not limited to, the use of any instrument or device in a manner that is not in accordance with the customary standards and practices of the dental profession. This section shall not apply to research conducted by accredited dental schools or colleges, or to research conducted pursuant to an investigational device exemption issued by the United States Food and Drug Administration.

1. (a) (1) A licensee who fails or refuses to comply with a request for the dental records of a patient, that is accompanied by written authorization of the patient or the patient's representative, as defined in subdivision (e) of Section 123105 of the Health and Safety Code, for release of record to the board, within 15 days of receiving the request and authorization, shall pay to the board a civil penalty of two hundred fifty dollars ($250) per day for each day that the documents have not been produced after the 15th day, up to a maximum of five thousand dollars ($5,000) unless the licensee is unable to provide the documents within this time period for good cause.

   (2) A health care facility shall comply with a request for the dental records of a patient that is accompanied by that patient's written authorization for release of records to the board together with a notice citing this section and describing the penalties for failure to comply with this section. Failure to provide the patient's dental records to the board within 30 days of receiving this request, authorization, and notice shall subject the health care facility to a civil penalty, payable to the board, of up to two hundred fifty dollars ($250) per day for each day that the documents have not been produced after the 30th day, up to a maximum of five thousand dollars ($5,000), unless the health care facility is unable to provide the documents within this time period for good cause. This paragraph shall not require health care facilities to assist the board in obtaining the patient's authorization. The board shall pay the reasonable cost of copying the dental records.

(b) (1) A licensee who fails or refuses to comply with a court order, issued in the enforcement of a subpoena, mandating the release of records to the board shall pay to the board a civil penalty of one thousand dollars ($1,000) per day for each day that the documents have not been produced after the date by which the court order requires the documents to be produced, unless it is determined that the order is unlawful or invalid. Any statute of limitations applicable to the filing of an accusation by the board shall be tolled during the period the licensee is out of compliance with the court order and during any related appeals.

(2) Any licensee who fails or refuses to comply with a court order, issued in the enforcement of a subpoena, mandating the release of records to the board is guilty of a misdemeanor punishable by a fine payable to the board not to exceed five thousand dollars ($5,000). The fine shall be added to the licensee's renewal fee if it is not paid by the next succeeding renewal date. Any statute of limitations applicable to the filing of an accusation by the board shall be tolled during the period the licensee is out of compliance with the court order and during any related appeals.

(3) A health care facility that fails or refuses to comply with a court order, issued in the enforcement of a subpoena, mandating the release of patient records to the board, that is accompanied by a notice citing this section and describing the penalties for failure to comply with this section, shall pay to the board a civil penalty of up to one thousand dollars ($1,000) per day for each day that the documents have not been produced, up to ten thousand dollars ($10,000), after the date by which the court order requires the documents to be produced, unless it is determined that the order is unlawful or invalid. Any statute of limitations applicable to the filing of an accusation by the board against a licensee shall be tolled during the period the health care facility is out of compliance with the court order and during any related appeals.

(4) Any health care facility that fails or refuses to comply with a court order, issued in the enforcement of a subpoena, mandating the release of records to the board is guilty of a misdemeanor punishable by a fine payable to the board not to exceed five thousand dollars ($5,000). Any statute of limitations

applicable to the filing of an accusation by the board against a licensee shall be tolled during the period the health care facility is out of compliance with the court order and during any related appeals.

(c) Multiple acts by a licensee in violation of subdivision (b) shall be punishable by a fine not to exceed five thousand dollars ($5,000) or by imprisonment in a county jail not exceeding six months, or by both that fine and imprisonment. Multiple acts by a health care facility in violation of subdivision (b) shall be punishable by a fine not to exceed five thousand dollars ($5,000) and shall be reported to the State Department of Health Care Services and shall be considered as grounds for disciplinary action with respect to licensure, including suspension or revocation of the license or certificate.

(d) A failure or refusal to comply with a court order, issued in the enforcement of a subpoena, mandating the release of records to the board constitutes unprofessional conduct and is grounds for suspension or revocation of the licensee's license.

(e) Imposition of the civil penalties authorized by this section shall be in accordance with the Administrative Procedure Act (Chapter 5 (commencing with Section 11500) of Division 3 of Title 2 of the Government Code).

(f) For the purposes of this section, a "health care facility" means a clinic or health care facility licensed or exempt from licensure pursuant to Division 2 (commencing with Section 1200) of the Health and Safety Code.

1684.5. (a) In addition to other acts constituting unprofessional conduct under this chapter, it is unprofessional conduct for any dentist to perform or allow to be performed any treatment on a patient who is not a patient of record of that dentist. A dentist may, however, after conducting a preliminary oral examination, require or permit any dental auxiliary to perform procedures necessary for diagnostic purposes, provided that the procedures are permitted under the auxiliary's authorized scope of practice. Additionally, a dentist may require or permit a dental auxiliary to perform all of the following duties prior to any examination of the patient by the dentist, provided that the duties are authorized for the particular classification of dental auxiliary pursuant to Article 7 (commencing with Section 1740):

1. Expose emergency radiographs upon direction of the dentist.
2. If the dental auxiliary is a registered dental assistant in extended functions, a registered dental hygienist, or a registered dental hygienist in alternative practice, determine and perform radiographs for the specific purpose of aiding a dentist in completing a comprehensive diagnosis and treatment plan for a patient using telehealth, as defined by Section 2290.5, for the purpose of communication with the supervising dentist pursuant to Sections 1753.55, 1910.5, and 1926.05. A dentist is not required to review patient records or make a diagnosis using telehealth.
3. Perform extra-oral duties or functions specified by the dentist.
4. Perform mouth-mirror inspections of the oral cavity, to include charting of obvious lesions, malocclusions, existing restorations, and missing teeth.

(b) For purposes of this section, "patient of record" refers to a patient who has been examined, has had a medical and dental history completed and evaluated, and has had oral conditions diagnosed and a written plan developed by the licensed dentist.

(c) For purposes of this section, if dental treatment is provided to a patient by a registered dental assistant in extended functions, a registered dental hygienist, or a registered dental hygienist in alternative practice pursuant to the diagnosis and treatment plan authorized by a supervising dentist, at a location other than the dentist's practice location, it is the responsibility of the authorizing dentist that the patient or the patient's representative receive written notification that the care was provided at the direction of the authorizing dentist and that the notification include the authorizing dentist's name, practice location address, and telephone number. This provision shall not require patient notification for dental hygiene preventive services provided in public health programs as specified and authorized in Section 1911, or for dental hygiene care when provided as specified and authorized in Section 1926.

(d) A dentist shall not concurrently supervise more than a total of five registered dental assistants in extended functions, registered dental hygienists, or registered dental hygienists in alternative practice providing services pursuant to Sections 1753.55, 1910.5, and 1926.05.

(e) This section shall not apply to dentists providing examinations on a temporary basis outside of a dental office in settings including, but not limited to, health fairs and school screenings.

(f) This section shall not apply to fluoride mouth rinse or supplement programs administered in a school or preschool setting.

Section 1685. In addition to other acts constituting unprofessional conduct under this chapter, it is unprofessional conduct for a person licensed under this chapter to require, either directly or through an office policy, or knowingly permit the delivery of dental care that discourages necessary treatment or permits clearly excessive treatment, incompetent treatment, grossly negligent treatment, repeated negligent acts, or unnecessary treatment, as determined by the standard of practice in the community.

CCR Section 1018.05 Unprofessional Conduct Defined. In addition to those acts detailed in Business and Professions Code Sections 1670, 1680, 1681 and 1682, the following shall also constitute unprofessional conduct:

(a) Failure to provide records requested by the Board within 15 days of the date of receipt of the request or within the time specified in the request, whichever is later, unless the licensee is unable to provide the documents within this time period for good cause. For the purposes of this section, "good cause" includes physical inability to access the records in the time allowed due to illness or travel.

(b) Failure to report to the Board, within 30 days, any of the following:

1. The bringing of an indictment or information charging a felony against the licensee.
2. The conviction of the licensee, including any verdict of guilty, or pleas of guilty or no contest, of any felony or misdemeanor.
3. Any disciplinary action taken by another professional licensing entity or authority of this state or of another state or an agency of the federal government or the United States military.
4. For the purposes of this section, "conviction" means a plea or verdict of guilty or a conviction following a plea of nolo contendere or "no contest" and any conviction that has been set aside or deferred pursuant to Sections 1000 or 1203.4 of the Penal Code, including infractions, misdemeanors, and felonies. "Conviction" does not include traffic infractions with a fine of less than one thousand dollars ($1,000) unless the infraction involved alcohol or controlled substances.

VIOLATIONS AND PENALTIES

As discussed, various acts or omissions can be cause for revocation or suspension of a license. Violation of any section of the Dental Practice Act can also lead to civil and criminal prosecution, including [1]:

Section 1700. Any person, company, or association is guilty of a misdemeanor, and upon conviction thereof shall be punished by imprisonment in the county jail not less than 10 days nor more than one year, or by a fine of not less than one hundred dollars ($100) nor more than one thousand five hundred dollars ($1,500), or by both fine and imprisonment, who:

(a) Assumes the degree of "doctor of dental surgery," "doctor of dental science," or "doctor of dental medicine" or appends the letters "DDS," or "DDSc" or "DMD" to his or her name without having had the right to assume the title conferred upon him or her by diploma from a recognized dental college or school legally empowered to confer the same.

(b) Assumes any title, or appends any letters to his or her name, with the intent to represent falsely that he or she has received a dental degree or license.

(c) Engages in the practice of dentistry without causing to be displayed in an area that is likely to be seen by all patients who use the facility, the original or copy of the current license, permit, or registration of each person employed at the facility to practice dentistry.

(d) Within 10 days after demand is made by the executive officer of the board, fails to furnish to the board the name and address of all persons practicing or assisting in the practice of dentistry in the office of the person, company, or association, at any time within 60 days prior to the demand, together with a sworn statement showing under and by what license or authority this person, company, or association and any employees are or have been practicing dentistry. This sworn statement shall not be used in any prosecution under this section.

(e) Is under the influence of alcohol or a controlled substance while engaged in the practice of dentistry in actual attendance on patients to an extent that impairs his or her ability to conduct the practice of dentistry with safety to patients and the public.

Section 1700.5. Notwithstanding Section 1700, any person who holds a valid, unrevoked, and unsuspended certificate as a dentist under this chapter may append the letters "DDS" to his or her name, regardless of the degree conferred upon him or her by the dental college from which the licensee graduated.

Section 1701. (a) Any person is for the first offense guilty of a misdemeanor and shall be punishable by a fine of not less than two hundred dollars ($200) or more than three thousand dollars ($3,000), or by imprisonment in a county jail for not to exceed six months, or both, and for the second or a subsequent offense is guilty of a felony and upon conviction thereof shall be punished by a fine of not less than two thousand dollars ($2,000) nor more than six thousand dollars ($6,000), or by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code, or by both such fine and imprisonment, who:

(1) Sells or barters or offers to sell or barter any dental degree or any license or transcript made or purporting to be made pursuant to the laws regulating the license and registration of dentists.

(2) Purchases or procures by barter any such diploma, license or transcript with intent that the same shall be used in evidence of the holder's qualification to practice dentistry, or in fraud of the laws regulating such practice.

(3) With fraudulent intent, makes or attempts to make, counterfeits or alters in a material regard any such diploma, certificate or transcript.

(4) Uses, attempts or causes to be used, any such diploma, certificate or transcript which has been purchased, fraudulently issued, counterfeited or materially altered, either as a license to practice dentistry, or in order to procure registration as a dentist.

(5) In an affidavit, required of an applicant for examination, license or registration under this chapter, willfully makes a false statement in a material regard.

(6) Practices dentistry or offers to practice dentistry as it is defined in this chapter, either without a license, or when his license has been revoked or suspended.

(7) Under any false, assumed or fictitious name, either as an individual, firm, corporation or otherwise, or any name other than the name under which he is licensed, practices, advertises or in any other manner indicates that he is practicing or will practice dentistry, except such name as is specified in a valid permit issued pursuant to Section 1701.5.

(b) The board may post an administrative citation issued pursuant to Section 148 on the board's internet website for an offense described in subdivision (a).

Section 1701.1. (a) Notwithstanding Sections 1700 and 1701, a person who willfully, under circumstances or conditions that cause or create risk of bodily harm, serious physical or mental illness, or death, practices or attempts to practice, or advertises or holds himself or herself out as practicing dentistry without having at the time of so doing a valid, unrevoked, and unsuspended certificate, license, registration, or permit as provided in this chapter, or without being authorized to perform that act pursuant to a certificate, license, registration, or permit obtained in accordance with some other provision of law, is guilty of a public offense, punishable by a fine not exceeding ten thousand dollars ($10,000), by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code, by imprisonment in a county jail not exceeding one year, or by both the fine and either imprisonment.

(b) A person who conspires with or aids and abets another to commit any act described in subdivision (a) is guilty of a public offense and subject to the punishment described in subdivision (a).

(c) The board may post an administrative citation issued pursuant to Section 148 on the board's internet website for an offense described in subdivisions (a) and (b).

(d) The remedy provided in this section shall not preclude any other remedy provided by law.

LAWS GOVERNING THE PRESCRIPTION OF DRUGS

The California Dental Practice Act states that only doctors of dentistry are permitted to prescribe drugs, including analgesics, sedatives, and antibiotics, although prescription of oral conscious sedation to children younger than 13 years of age requires a permit. Dental assistants and dental hygienists are not permitted to write prescriptions [1]. There are many federal and state laws and regulations pertaining to prescribing. It is the responsibility of each Drug Enforcement Administration (DEA)-registered prescriber (or those exempted) to be familiar with and maintain knowledge of all applicable laws and regulations. Pertinent citations of federal laws governing the prescription of controlled substances are included in the DEA Practitioner's Manual, available at https://www.deadiversion.usdoj.gov/GDP/(DEA-DC-071)(EO-DEA226)_Practitioner's_Manual_(final).pdf. The California Uniform Controlled Substances Act (part of the California Health and Safety Code) can be found at https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=HSC&division=10.&title=&part=&chapter=&article. The Substances Act begins at Section 11000, and information regarding prescriptions begins in Section 11150.

There must be careful consideration when prescribing to addicts or suspected addicts, particularly when patients are requesting specific drugs. As of 2016, California legislation requires that all prescribers of controlled substances register to access CURES, the state prescription drug monitoring program database intended to aid prescribers and dispensers in identifying fraudulent activity, thereby reducing prescription drug abuse and diversion without affecting legitimate medical practice or patient care. As of October 2018, all licensees authorized to prescribe, order, administer, furnish or dispense controlled substances in California must, with some exceptions, check a patient's prescription history in CURES 2.0 before prescribing a Schedule II, III, or IV substance [27].

The following section of the California Business and Professional Code addresses unprofessional conduct related to furnishing prescription drugs and excessive prescribing.

Section 725. (a) Repeated acts of clearly excessive prescribing, furnishing, dispensing, or administering of drugs or treatment, repeated acts of clearly excessive use of diagnostic procedures, or repeated acts of clearly excessive use of diagnostic or treatment facilities as determined by the standard of the community of licensees is unprofessional conduct for a physician and surgeon, dentist, podiatrist, psychologist, physical therapist, chiropractor, optometrist, speech-language pathologist, or audiologist.

(b) Any person who engages in repeated acts of clearly excessive prescribing or administering of drugs or treatment is guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars ($100) nor more than six hundred dollars ($600), or by imprisonment for a term of not less than 60 days nor more than 180 days, or by both that fine and imprisonment.

(c) A practitioner who has a medical basis for prescribing, furnishing, dispensing, or administering dangerous drugs or prescription controlled substances shall not be subject to disciplinary action or prosecution under this section.

(d) No physician and surgeon shall be subject to disciplinary action pursuant to this section for treating intractable pain in compliance with Section 2241.5.

The following sections of the Uniform Controlled Substances Act addresses the facilitation of abuse by prescribing practices, including the new CURES reporting requirements.

Section 11150.2. (a) Notwithstanding any other law, if cannabinoids are excluded from Schedule I of the federal Controlled Substances Act and placed on a schedule of the act other than Schedule I, or if a product composed of cannabinoids is

approved by the federal Food and Drug Administration and either placed on a schedule of the act other than Schedule I, or exempted from one or more provisions of the act, so as to permit a physician, pharmacist, or other authorized healing arts licensee acting within their scope of practice, to prescribe, furnish, or dispense that product, the physician, pharmacist, or other authorized healing arts licensee who prescribes, furnishes, or dispenses that product in accordance with federal law shall be deemed to be in compliance with state law governing those acts.

(b) For purposes of this chapter, upon the effective date of one of the changes in federal law described in subdivision (a), notwithstanding any other state law, a product composed of cannabinoids may be prescribed, furnished, dispensed, transferred, transported, possessed, or used in accordance with federal law and is authorized pursuant to state law.

(c) This section does not apply to any product containing cannabinoids that is made or derived from industrial hemp, as defined in Section 11018.5 and regulated pursuant to that section.

Section 11153. (a) A prescription for a controlled substance shall only be issued for a legitimate medical purpose by an individual practitioner acting in the usual course of his or her professional practice. The responsibility for the proper prescribing and dispensing of controlled substances is upon the prescribing practitioner, but a corresponding responsibility rests with the pharmacist who fills the prescription. Except as authorized by this division, the following are not legal prescriptions: (1) an order purporting to be a prescription which is issued not in the usual course of professional treatment or in legitimate and authorized research; or (2) an order for an addict or habitual user of controlled substances, which is issued not in the course of professional treatment or as part of an authorized narcotic treatment program, for the purpose of providing the user with controlled substances, sufficient to keep him or her comfortable by maintaining customary use.

(b) Any person who knowingly violates this section shall be punished by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code, or in a county jail not exceeding one year, or by a fine not exceeding twenty thousand dollars ($20,000), or by both that fine and imprisonment.

(c) No provision of the amendments to this section enacted during the second year of the 1981–82 Regular Session shall be construed as expanding the scope of practice of a pharmacist.

Section 11164.1. (a) 1. Notwithstanding any other law, a prescription for a controlled substance issued by a prescriber in another state for delivery to a patient in another state may be dispensed by a California pharmacy, if the prescription conforms with the requirements for controlled substance prescriptions in the state in which the controlled substance was prescribed.

2. A prescription for Schedule II, Schedule III, Schedule IV, or Schedule V controlled substances dispensed pursuant to this subdivision shall be reported by the dispensing pharmacy to the Department of Justice in the manner prescribed by subdivision (d) of Section 11165.

(b) A pharmacy may dispense a prescription for a Schedule III, Schedule IV, or Schedule V controlled substance from an out-of-state prescriber pursuant to Section 4005 of the Business and Professions Code and Section 1717 of Title 16 of the California Code of Regulations.

(c) This section shall become operative on January 1, 2021.

Section 11165. (a) To assist health care practitioners in their efforts to ensure appropriate prescribing, ordering, administering, furnishing, and dispensing of controlled substances, law enforcement and regulatory agencies in their efforts to control the diversion and resultant abuse of Schedule II, Schedule III, Schedule IV, and Schedule V controlled substances, and for statistical analysis, education, and research, the Department of Justice shall, contingent upon the availability of adequate funds in the CURES Fund, maintain the Controlled Substance Utilization Review and Evaluation System (CURES) for the electronic monitoring of, and Internet access to information regarding, the prescribing and dispensing of Schedule II, Schedule III, Schedule IV, and Schedule V controlled substances by all practitioners authorized to prescribe, order, administer, furnish, or dispense these controlled substances.

(b) The Department of Justice may seek and use grant funds to pay the costs incurred by the operation and maintenance of CURES. The department shall annually report to the Legislature and make available to the public the amount and source of funds it receives for support of CURES.

(c) 1. The operation of CURES shall comply with all applicable federal and state privacy and security laws and regulations.

2. A. CURES shall operate under existing provisions of law to safeguard the privacy and confidentiality of patients. Data obtained from CURES shall only be provided to appropriate state, local, and federal public agencies for disciplinary, civil, or criminal purposes and to other agencies or entities, as determined by the department, for the purpose of educating practitioners and others in lieu of disciplinary, civil, or criminal actions. Data may be provided to public or private entities, as approved by the department, for educational, peer review, statistical, or research purposes, if patient information, including information that may identify the patient, is not compromised. The University of California shall be provided access to identifiable data for research purposes if the requirements of subdivision (t) of Section 1798.24 of the Civil Code are

satisfied. Further, data disclosed to an individual or agency as described in this subdivision shall not be disclosed, sold, or transferred to a third party, unless authorized by, or pursuant to, state and federal privacy and security laws and regulations. The department shall establish policies, procedures, and regulations regarding the use, access, evaluation, management, implementation, operation, storage, disclosure, and security of the information within CURES, consistent with this subdivision.

B. Notwithstanding subparagraph (A), a regulatory board whose licensees do not prescribe, order, administer, furnish, or dispense controlled substances shall not be provided data obtained from CURES.

3. The department shall, no later than January 1, 2021, adopt regulations regarding the access and use of the information within CURES. The department shall consult with all stakeholders identified by the department during the rulemaking process. The regulations shall, at a minimum, address all of the following in a manner consistent with this chapter:

A. The process for approving, denying, and disapproving individuals or entities seeking access to information in CURES.

B. The purposes for which a health care practitioner may access information in CURES.

C. The conditions under which a warrant, subpoena, or court order is required for a law enforcement agency to obtain information from CURES as part of a criminal investigation.

D. The process by which information in CURES may be provided for educational, peer review, statistical, or research purposes.

4. In accordance with federal and state privacy laws and regulations, a health care practitioner may provide a patient with a copy of the patient's CURES patient activity report as long as no additional CURES data are provided and the health care practitioner keeps a copy of the report in the patient's medical record in compliance with subdivision (d) of Section 11165.1.

(d) For each prescription for a Schedule II, Schedule III, Schedule IV, or Schedule V controlled substance, as defined in the controlled substances schedules in federal law and regulations, specifically Sections 1308.12, 1308.13, 1308.14, and 1308.15, respectively, of Title 21 of the Code of Federal Regulations, the dispensing pharmacy, clinic, or other dispenser shall report the following information to the department or contracted prescription data processing vendor as soon as reasonably possible, but not more than one working day after the date a controlled substance is released to the patient or patient's representative, in a format specified by the department:

1. Full name, address, and, if available, telephone number of the ultimate user or research subject, or contact information as determined by the Secretary of the United States Department of Health and Human Services, and the gender, and date of birth of the ultimate user.
2. The prescriber's category of licensure, license number, national provider identifier (NPI) number, if applicable, the federal controlled substance registration number, and the state medical license number of a prescriber using the federal controlled substance registration number of a government-exempt facility.
3. Pharmacy prescription number, license number, NPI number, and federal controlled substance registration number.
4. National Drug Code (NDC) number of the controlled substance dispensed.
5. Quantity of the controlled substance dispensed.
6. The International Statistical Classification of Diseases (ICD) Code contained in the most current ICD revision, or any revision deemed sufficient by the State Board of Pharmacy, if available.
7. Number of refills ordered.
8. Whether the drug was dispensed as a refill of a prescription or as a first-time request.
9. Prescribing date of the prescription.
10. Date of dispensing of the prescription.
11. The serial number for the corresponding prescription form, if applicable.

(e) The department may invite stakeholders to assist, advise, and make recommendations on the establishment of rules and regulations necessary to ensure the proper administration and enforcement of the CURES database. A prescriber or dispenser invitee shall be licensed by one of the boards or committees identified in subdivision (d) of Section 208 of the Business and Professions Code, in active practice in California, and a regular user of CURES.

(f) The department shall, prior to upgrading CURES, consult with prescribers licensed by one of the boards or committees identified in subdivision (d) of Section 208 of the Business and Professions Code, one or more of the boards or committees identified in subdivision (d) of Section 208 of the Business and Professions Code, and any other stakeholder identified by the department, for the purpose of identifying desirable capabilities and upgrades to the CURES Prescription Drug Monitoring Program (PDMP).

(g) The department may establish a process to educate authorized subscribers of the CURES PDMP on how to access and use the CURES PDMP.

(h) 1. The department may enter into an agreement with an entity operating an interstate data sharing hub, or an agency operating a prescription drug monitoring program in another state, for purposes of interstate data sharing of prescription drug monitoring program information.

2. Data obtained from CURES may be provided to authorized users of another state's prescription drug monitoring program, as determined by the department pursuant to subdivision (c), if the entity operating the interstate data sharing hub, and the prescription drug monitoring program of that state, as applicable, have entered into an agreement with the department for interstate data sharing of prescription drug monitoring program information.

3. An agreement entered into by the department for purposes of interstate data sharing of prescription drug monitoring program information shall ensure that all access to data obtained from CURES and the handling of data contained within CURES comply with California law, including regulations, and meet the same patient privacy, audit, and data security standards employed and required for direct access to CURES.

4. For purposes of interstate data sharing of CURES information pursuant to this subdivision, an authorized user of another state's prescription drug monitoring program shall not be required to register with CURES, if the authorized user is registered and in good standing with that state's prescription drug monitoring program.

5. The department shall not enter into an agreement pursuant to this subdivision until the department has issued final regulations regarding the access and use of the information within CURES as required by paragraph (3) of subdivision (c).

(j) If the dispensing pharmacy, clinic, or other dispenser experiences a temporary technological or electrical failure, it shall, without undue delay, seek to correct any cause of the temporary technological or electrical failure that is reasonably within its control. The deadline for transmitting prescription information to the department or contracted prescription data processing vendor pursuant to subdivision (d) shall be extended until the failure is corrected. If the dispensing pharmacy, clinic, or other dispenser experiences technological limitations that are not reasonably within its control, or is impacted by a natural or manmade disaster, the deadline for transmitting prescription information to the department or contracted prescription data processing vendor shall be extended until normal operations have resumed.

Section 11165.1. (a) 1. A. (i) A health care practitioner authorized to prescribe, order, administer, furnish, or dispense Schedule II, Schedule III, Schedule IV, or Schedule V controlled substances pursuant to Section 11150 shall, upon receipt of a federal Drug Enforcement Administration (DEA) registration, submit an application developed by the department to obtain approval to electronically access information regarding the controlled substance history of a patient that is maintained by the department. Upon approval, the department shall release to that practitioner or their delegate the electronic history of controlled substances dispensed to an individual under the practitioner's care based on data contained in the CURES Prescription Drug Monitoring Program (PDMP).

(ii) A pharmacist shall, upon licensure, submit an application developed by the department to obtain approval to electronically access information regarding the controlled substance history of a patient that is maintained by the department. Upon approval, the department shall release to the pharmacist or their delegate the electronic history of controlled substances dispensed to an individual under the pharmacist's care based on data contained in the CURES PDMP.

(iii) A licensed physician and surgeon who does not hold a DEA registration may submit an application developed by the department to obtain approval to electronically access information regarding the controlled substance history of the patient that is maintained by the department. Upon approval, the department shall release to the physician and surgeon or their delegate the electronic history of controlled substances dispensed to a patient under their care based on data contained in the CURES PDMP.

(iv) The department shall implement its duties described in clauses (i), (ii), and (iii) upon completion of any technological changes to the CURES database necessary to support clauses (i), (ii), and (iii), or by October 1, 2022, whichever is sooner.

B. The department may deny an application or suspend a subscriber, for reasons that include, but are not limited to, the following:

(i) Materially falsifying an application to access information contained in the CURES database.

(ii) Failing to maintain effective controls for access to the patient activity report.

(iii) Having their federal DEA registration suspended or revoked.

(iv) Violating a law governing controlled substances or another law for which the possession or use of a controlled substance is an element of the crime.

(v) Accessing information for a reason other than to diagnose or treat a patient, or to document compliance with the law.

C. An authorized subscriber shall notify the department within 30 days of a change to the subscriber account.

D. An approved health care practitioner, pharmacist, or a person acting on behalf of a health care practitioner or pharmacist pursuant to subdivision (b) of Section 209 of the Business and Professions Code may use the department's online portal or a health information technology system that meets the criteria required in subparagraph (E) to access information in the CURES database pursuant to this section. A subscriber who uses a health information technology system that meets the criteria required in subparagraph (E) to access the CURES database may submit automated queries to the CURES database that are triggered by predetermined criteria.

E. An approved health care practitioner or pharmacist may submit queries to the CURES database through a health information technology system if the entity that operates the health information technology system certifies all of the following:

(i) The entity will not use or disclose data received from the CURES database for any purpose other than delivering the data to an approved health care practitioner or pharmacist or performing data processing activities that may be necessary to enable the delivery unless authorized by, and pursuant to, state and federal privacy and security laws and regulations.

(ii) The health information technology system will authenticate the identity of an authorized health care practitioner or pharmacist initiating queries to the CURES database and, at the time of the query to the CURES database, the health information technology system submits the following data regarding the query to CURES:

(I) The date of the query.

(II) The time of the query.

(III) The first and last name of the patient queried.

(IV) The date of birth of the patient queried.

(V) The identification of the CURES user for whom the system is making the query.

(iii) The health information technology system meets applicable patient privacy and information security requirements of state and federal law.

(iv) The entity has entered into a memorandum of understanding with the department that solely addresses the technical specifications of the health information technology system to ensure the security of the data in the CURES database and the secure transfer of data from the CURES database. The technical specifications shall be universal for all health information technology systems that establish a method of system integration to retrieve information from the CURES database. The memorandum of understanding shall not govern, or in any way impact or restrict, the use of data received from the CURES database or impose any additional burdens on covered entities in compliance with the regulations promulgated pursuant to the federal Health Insurance Portability and Accountability Act of 1996 found in Parts 160 and 164 of Title 45 of the Code of Federal Regulations.

F. No later than October 1, 2018, the department shall develop a programming interface or other method of system integration to allow health information technology systems that meet the requirements in subparagraph (E) to retrieve information in the CURES database on behalf of an authorized health care practitioner or pharmacist.

G. The department shall not access patient-identifiable information in an entity's health information technology system.

H. An entity that operates a health information technology system that is requesting to establish an integration with the CURES database shall pay a reasonable fee to cover the cost of establishing and maintaining integration with the CURES database.

I. The department may prohibit integration or terminate a health information technology system's ability to retrieve information in the CURES database if the health information technology system fails to meet the requirements of subparagraph (E), or the entity operating the health information technology system does not fulfill its obligation under subparagraph (H).

2. A health care practitioner authorized to prescribe, order, administer, furnish, or dispense Schedule II, Schedule III, Schedule IV, or Schedule V controlled substances pursuant to Section 11150 or a pharmacist shall be deemed to have complied with paragraph (1) if the licensed health care practitioner or pharmacist has been approved to access the CURES database through the process developed pursuant to subdivision (a) of Section 209 of the Business and Professions Code.

(b) A request for, or release of, a controlled substance history pursuant to this section shall be made in accordance with guidelines developed by the department.

(c) In order to prevent the inappropriate, improper, or illegal use of Schedule II, Schedule III, Schedule IV, or Schedule V controlled substances, the department may initiate the referral of the history of controlled substances dispensed to an individual based on data contained in CURES to licensed health care practitioners, pharmacists, or both, providing care or services to the individual.

(d) The history of controlled substances dispensed to an individual based on data contained in CURES that is received by a practitioner or pharmacist from the department pursuant to this section is medical information subject to the provisions of the Confidentiality of Medical Information Act contained in Part 2.6 (commencing with Section 56) of Division 1 of the Civil Code.

(e) Information concerning a patient's controlled substance history provided to a practitioner or pharmacist pursuant to this section shall include prescriptions for controlled substances listed in Sections 1308.12, 1308.13, 1308.14, and 1308.15 of Title 21 of the Code of Federal Regulations.

(f) A health care practitioner, pharmacist, or a person acting on behalf of a health care practitioner or pharmacist, when acting with reasonable care and in good faith, is not subject to civil or administrative liability arising from false, incomplete, inaccurate, or misattributed information submitted to, reported by, or relied upon in the CURES database or for a resulting failure of the CURES database to accurately or timely report that information.

(g) For purposes of this section, the following terms have the following meanings:

1. "Automated basis" means using predefined criteria to trigger an automated query to the CURES database, which can be attributed to a specific health care practitioner or pharmacist.
2. "Department" means the Department of Justice.
3. "Entity" means an organization that operates, or provides or makes available, a health information technology system to a health care practitioner or pharmacist.
4. "Health information technology system" means an information processing application using hardware and software for the storage, retrieval, sharing of or use of patient data for communication, decision-making, coordination of care, or the quality, safety, or efficiency of the practice of medicine or delivery of health care services, including, but not limited to, electronic medical record applications, health information exchange systems, or other interoperable clinical or health care information system.

(h) This section shall become operative on July 1, 2021, or upon the date the department promulgates regulations to implement this section and posts those regulations on its Internet website, whichever date is earlier.

Section 11165.2. (a) The Department of Justice may conduct audits of the CURES Prescription Drug Monitoring Program system and its users.

(b) The Department of Justice may establish, by regulation, a system for the issuance to a CURES Prescription Drug Monitoring Program subscriber of a citation which may contain an order of abatement, or an order to pay an administrative fine assessed by the Department of Justice if the subscriber is in violation of any provision of this chapter or any regulation adopted by the Department of Justice pursuant to this chapter.

(c) The system shall contain the following provisions:

1. Citations shall be in writing and shall describe with particularity the nature of the violation, including specific reference to the provision of law or regulation of the department determined to have been violated.
2. Whenever appropriate, the citation shall contain an order of abatement establishing a reasonable time for abatement of the violation.
3. In no event shall the administrative fine assessed by the department exceed two thousand five hundred dollars ($2,500) for each violation. In assessing a fine, due consideration shall be given to the appropriateness of the amount of the fine with respect to such factors as the gravity of the violation, the good faith of the subscribers, and the history of previous violations.
4. An order of abatement or a fine assessment issued pursuant to a citation shall inform the subscriber that if the subscriber desires a hearing to contest the finding of a violation, a hearing shall be requested by written notice to the CURES Prescription Drug Monitoring Program within 30 days of the date of issuance of the citation or assessment. Hearings shall be held pursuant to Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.
5. In addition to requesting a hearing, the subscriber may, within 10 days after service of the citation, request in writing an opportunity for an informal conference with the department regarding the citation. At the conclusion of the informal conference,

the department may affirm, modify, or dismiss the citation, including any fine levied or order of abatement issued. The decision shall be deemed to be a final order with regard to the citation issued, including the fine levied or the order of abatement which could include permanent suspension to the system, a monetary fine, or both, depending on the gravity of the violation. However, the subscriber does not waive its right to request a hearing to contest a citation by requesting an informal conference. If the citation is affirmed, a formal hearing may be requested within 30 days of the date the citation was affirmed. If the citation is dismissed after the informal conference, the request for a hearing on the matter of the citation shall be deemed to be withdrawn. If the citation, including any fine levied or order of abatement, is modified, the citation originally issued shall be considered withdrawn and a new citation issued. If a hearing is requested for a subsequent citation, it shall be requested within 30 days of service of that subsequent citation.

6. Failure of a subscriber to pay a fine within 30 days of the date of assessment or comply with an order of abatement within the fixed time, unless the citation is being appealed, may result in disciplinary action taken by the department. If a citation is not contested and a fine is not paid, the subscriber account will be terminated:

   A. A citation may be issued without the assessment of an administrative fine.

   B. Assessment of administrative fines may be limited to only particular violations of law or department regulations.

(d) Notwithstanding any other provision of law, if a fine is paid to satisfy an assessment based on the finding of a violation, payment of the fine shall be represented as a satisfactory resolution of the matter for purposes of public disclosure.

(e) Administrative fines collected pursuant to this section shall be deposited in the CURES Program Special Fund, available upon appropriation by the Legislature. These special funds shall provide support for costs associated with informal and formal hearings, maintenance, and updates to the CURES Prescription Drug Monitoring Program.

(f) The sanctions authorized under this section shall be separate from, and in addition to, any other administrative, civil, or criminal remedies; however, a criminal action may not be initiated for a specific offense if a citation has been issued pursuant to this section for that offense, and a citation may not be issued pursuant to this section for a specific offense if a criminal action for that offense has been filed.

(g) Nothing in this section shall be deemed to prevent the department from serving and prosecuting an accusation to suspend or revoke a subscriber if grounds for that suspension or revocation exist.

Section 11165.4. (a) 1. A. (i) A health care practitioner authorized to prescribe, order, administer, or furnish a controlled substance shall consult the patient activity report or information from the patient activity report obtained from the CURES database to review a patient's controlled substance history for the past 12 months before prescribing a Schedule II, Schedule III, or Schedule IV controlled substance to the patient for the first time and at least once every six months thereafter if the prescriber renews the prescription and the substance remains part of the treatment of the patient.

(ii) If a health care practitioner authorized to prescribe, order, administer, or furnish a controlled substance is not required, pursuant to an exemption described in subdivision (c), to consult the patient activity report from the CURES database the first time the health care practitioner prescribes, orders, administers, or furnishes a controlled substance to a patient, the health care practitioner shall consult the patient activity report from the CURES database to review the patient's controlled substance history before subsequently prescribing a Schedule II, Schedule III, or Schedule IV controlled substance to the patient and at least once every six months thereafter if the prescriber renews the prescription and the substance remains part of the treatment of the patient.

(iii) A health care practitioner who did not directly access the CURES database to perform the required review of the controlled substance use report shall document in the patient's medical record that they reviewed the CURES database generated report within 24 hours of the controlled substance prescription that was provided to them by another authorized user of the CURES database.

B. For purposes of this paragraph, "first time" means the initial occurrence in which a health care practitioner, in their role as a health care practitioner, intends to prescribe, order, administer, or furnish a Schedule II, Schedule III, or Schedule IV controlled substance to a patient and has not previously prescribed a controlled substance to the patient.

2. A health care practitioner shall review a patient's controlled substance history that has been obtained from the CURES database no earlier than 24 hours, or the previous business day, before the health care practitioner prescribes, orders, administers, or furnishes a Schedule II, Schedule III, or Schedule IV controlled substance to the patient.

(b) The duty to consult the CURES database, as described in subdivision (a), does not apply to veterinarians or pharmacists.

(c) The duty to consult the CURES database, as described in subdivision (a), does not apply to a health care practitioner in any of the following circumstances:

1. If a health care practitioner prescribes, orders, or furnishes a controlled substance to be administered to a patient while the patient in any of the following facilities or during an emergency transfer between any of the following facilities, or for use while on facility premises:
   A. A licensed clinic, as described in Chapter 1 (commencing with Section 1200) of Division 2.
   B. An outpatient setting, as described in Chapter 1.3 (commencing with Section 1248) of Division 2.
   C. A health facility, as described in Chapter 2 (commencing with Section 1250) of Division 2.
   D. A county medical facility, as described in Chapter 2.5 (commencing with Section 1440) of Division 2.
   E. Another medical facility, including, but not limited to, an office of a health care practitioner and an imaging center.
   F. A correctional clinic, as described in Section 4187 of the Business and Professions Code, or a correctional pharmacy, as described in Section 4021.5 of the Business and Professions Code.
2. If a health care practitioner prescribes, orders, administers, or furnishes a controlled substance in the emergency department of a general acute care hospital and the quantity of the controlled substance does not exceed a nonrefillable seven-day supply of the controlled substance to be used in accordance with the directions for use.
3. If a health care practitioner prescribes, orders, administers, or furnishes buprenorphine or other controlled substance containing buprenorphine in the emergency department of a general acute care hospital.
4. If a health care practitioner prescribes, orders, administers, or furnishes a controlled substance to a patient as part of the patient's treatment for a surgical, radiotherapeutic, or diagnostic procedure and the quantity of the controlled substance does not exceed a nonrefillable seven-day supply of the controlled substance to be used in accordance with the directions for use, in any of the following facilities:
   A. A licensed clinic, as described in Chapter 1 (commencing with Section 1200) of Division 2.
   B. An outpatient setting, as described in Chapter 1.3 (commencing with Section 1248) of Division 2.
   C. A health facility, as described in Chapter 2 (commencing with Section 1250) of Division 2.
   D. A county medical facility, as described in Chapter 2.5 (commencing with Section 1440) of Division 2.
   E. A place of practice, as defined in Section 1658 of the Business and Professions Code.
   F. Another medical facility where surgical procedures are permitted to take place, including, but not limited to, the office of a health care practitioner.
5. If a health care practitioner prescribes, orders, administers, or furnishes a controlled substance to a patient who is terminally ill, as defined in subdivision (c) of Section 11159.2.
6. A. If all of the following circumstances are satisfied:
      (i) It is not reasonably possible for a health care practitioner to access the information in the CURES database in a timely manner.
      (ii) Another health care practitioner or designee authorized to access the CURES database is not reasonably available.
      (iii) The quantity of controlled substance prescribed, ordered, administered, or furnished does not exceed a nonrefillable seven-day supply of the controlled substance to be used in accordance with the directions for use and no refill of the controlled substance is allowed.
   B. A health care practitioner who does not consult the CURES database under subparagraph (A) shall document the reason they did not consult the database in the patient's medical record.
7. If the CURES database is not operational, as determined by the department, or cannot be accessed by a health care practitioner because of a temporary technological or electrical failure. A health care practitioner shall, without undue delay, seek to correct the cause of the temporary technological or electrical failure that is reasonably within the health care practitioner's control.

8. If the CURES database cannot be accessed because of technological limitations that are not reasonably within the control of a health care practitioner.
9. If consultation of the CURES database would, as determined by the health care practitioner, result in a patient's inability to obtain a prescription in a timely manner and thereby adversely impact the patient's medical condition, provided that the quantity of the controlled substance does not exceed a nonrefillable seven-day supply if the controlled substance were used in accordance with the directions for use.

(d) 1. A health care practitioner who fails to consult the CURES database, as described in subdivision (a), shall be referred to the appropriate state professional licensing board solely for administrative sanctions, as deemed appropriate by that board.

2. This section does not create a private cause of action against a health care practitioner. This section does not limit a health care practitioner's liability for the negligent failure to diagnose or treat a patient.

(e) All applicable state and federal privacy laws govern the duties required by this section.

(f) The provisions of this section are severable. If any provision of this section or its application is held invalid, that invalidity shall not affect other provisions or applications that can be given effect without the invalid provision or application.

(g) This section shall become operative on July 1, 2021, or upon the date the department promulgates regulations to implement this section and posts those regulations on its internet website, whichever date is earlier.

REPORTING OF ABUSE AND NEGLECT

In accordance with California Penal Code Section 11165.7, dentists, dental assistants, and dental hygienists are mandated reporters of child abuse and neglect [3]. Reporting suspected abuse is not only an ethical duty but is also a legal obligation.

CHILD ABUSE AND NEGLECT REPORTING LAW

Section 11164. (a) This article shall be known and may be cited as the Child Abuse and Neglect Reporting Act.

(b) The intent and purpose of this article is to protect children from abuse and neglect. In any investigation of suspected child abuse or neglect, all persons participating in the investigation of the case shall consider the needs of the child victim and shall do whatever is necessary to prevent psychological harm to the child victim.

Section 11166. (a) Except as provided in subdivision (d), and in Section 11166.05, a mandated reporter shall make a report to an agency specified in Section 11165.9 whenever the mandated reporter, in the mandated reporter's professional capacity or within the scope of the mandated reporter's employment, has knowledge of or observes a child whom the mandated reporter knows or reasonably suspects has been the victim of child abuse or neglect. The mandated reporter shall make an initial report by telephone to the agency immediately or as soon as is practicably possible, and shall prepare and send, fax, or electronically transmit a written follow-up report within 36 hours of receiving the information concerning the incident. The mandated reporter may include with the report any nonprivileged documentary evidence the mandated reporter possesses relating to the incident.

Section 11165.9. Reports of suspected child abuse or neglect shall be made by mandated reporters, or in the case of reports pursuant to Section 11166.05, may be made, to any police department or sheriff's department, not including a school district police or security department, county probation department, if designated by the county to receive mandated reports, or the county welfare department. Any of those agencies shall accept a report of suspected child abuse or neglect whether offered by a mandated reporter or another person, or referred by another agency, even if the agency to whom the report is being made lacks subject matter or geographical jurisdiction to investigate the reported case, unless the agency can immediately electronically transfer the call to an agency with proper jurisdiction. When an agency takes a report about a case of suspected child abuse or neglect in which that agency lacks jurisdiction, the agency shall immediately refer the case by telephone, fax, or electronic transmission to an agency with proper jurisdiction. Agencies that are required to receive reports of suspected child abuse or neglect may not refuse to accept a report of suspected child abuse or neglect from a mandated reporter or another person unless otherwise authorized pursuant to this section, and shall maintain a record of all reports received.

IDENTIFYING, DOCUMENTING, AND REPORTING ABUSE AND NEGLECT

Preventing serious morbidity and mortality involves intervening at the first suspicion or indication of abuse and/or neglect. Dentists and dental hygienists are often the healthcare professionals who have the most frequent interactions with children and should be attentive to any signs of neglect and physical abuse—as abusive injuries commonly involve the face, jaw, mouth, teeth, and tongue [4]. One study found that orofacial trauma was concurrent with 49% of documented cases of child physical abuse [5]. Other studies show that craniofacial and neck injuries occur in 50% to 65% of child abuse victims and that the lips are a site for abusive injury in 54% of cases [6; 7].

Clinical Signs of Abuse

The American Academy of Pediatrics (AAP) Committee on Child Abuse and Neglect and the California Dental Association have published useful articles regarding the identification of the orofacial signs of abuse and particular injuries of concern. According to these sources, possible signs of abuse include [6; 7; 12]:

- Forced feeding injuries caused by eating utensils, bottles, hands, fingers, and other objects; scalding liquids; or caustic substances. These may be responsible for burns, contusions, or lacerations of the lips, tongue, buccal mucosa, gingival alveolar mucosa, frenum, or palate (soft and hard). Objects forced into the face/mouth may also cause facial bone and jaw fractures and avulsed, displaced, or fractured teeth.
- Mouth gagging injuries resulting in bruises, lichenification, or scarring at the corners of the mouth
- Strangulation injuries resulting in bruising, a hoarse or raspy voice, and difficulty breathing
- Discolored teeth from previous trauma
- Serious trauma (e.g., retropharyngeal abscesses, posterior pharyngeal injuries) resulting from caregivers with factitious disorder (i.e., Münchausen syndrome) by proxy
- Injury to the petechiae of the palate (particularly at the junction of soft and hard palate) resulting from forced oral sex
- Sexually transmitted oral/perioral infections (e.g., gonorrhea, human papillomavirus warts), although these can be transmitted by other means as well
- Bite marks or bruises on the head or face, strangulation marks, or black eyes
- Missing hair from hair pulling
- Welts in the shape of objects (e.g., belt buckle, clothes iron)
- Other suspicious trauma/bruises indicative of abuse (e.g., rope marks)

During examination, excessive caries, gingivitis, and oral infections/diseases should be noted as possible signs of neglect. (Parents or caretakers with an ignorance of proper oral care, who have no perceived value of oral health, with limited access to health care or insurance, and/or geographic isolation should be differentiated from those with a willful disregard for the child's health [6].) Perioral and intraoral injuries and infections in various stages of healing, especially those that seem inappropriate for the child's developmental age, should be documented. Additionally, abuse and neglect are more prevalent (up to four times more common) in individuals with developmental or physical disability [12].

Although accidental injuries are common in pediatric patients, the history of trauma, including mechanism and timing, must be weighed against the injury features. Characteristics of the injury that do not seem to match the reported history should spur suspicion of abuse. The acronym RADAR is commonly used to assist in the routine abuse screening of patients [29]:

- **R**outinely screen for signs and symptoms of abuse/neglect
- **A**sk direct, non-judgmental questions with compassion
- **D**ocument your findings
- **A**ssess patient safety before the patient leaves the medical setting
- **R**eview, refer, report

A parent or primary caretaker may be genuinely unaware of the abuse or injuries and may not be able to offer information relevant to the history. It is important not to make judgments of family members (either innocent or guilty), apportion blame, or attempt to personally undertake a criminal investigation. The scope of dental practice does not include these actions, and they may interfere with a law enforcement investigation. The AAP notes that the dental professional's role in a criminal investigation is to interpret medical information for nonmedical professionals in an understandable manner that accurately reflects the medical evidence [8]. Identify the medical problem, document the suspected abuse (e.g., names, photos, body map, preserve evidence), treat the injuries, and offer honest, factual medical information to parents, families, law enforcement, and justice officials.

Reporting Abuse

As noted in the California Dental Practice Act, dental healthcare professionals have a legal and ethical responsibility to report suspected child abuse to the proper authorities, not to punish perpetrators of abuse but to protect the abuse victims. One author writes, "The dentist must view himself as a child advocate. Simply treating dental and facial injuries of abused children while ignoring the social needs of the child and family is unacceptable" [9].

Nonetheless, the decision of whether or not to report suspected abuse is ethically challenging. Although healthcare professionals are obligated to report suspected abuse, suspicion of abuse is somewhat of a judgment call and certain biases may influence the decision to report. It has been noted that well-intentioned professionals in all fields are swayed by both negative and positive social biases (e.g., sex, race, socioeconomic status, physical appearance, job status), and it is advisable to challenge personal biases and weigh only the facts of the case. A 2008 prospective, observational AAP study found that, "clinicians did not report 27% of injuries considered likely or very likely caused by child abuse and 76% of injuries considered possibly caused by child abuse" because of various biases and experiences [10]. However, patients who had an injury that was not a laceration, who had more than one family risk factor, who had a serious injury, who had a child risk factor other than an inconsistent injury, who had a parental history of substance abuse, or who were unfamiliar to the clinician were more likely to be reported.

Professionally mandated reporters are protected from civil or criminal prosecution in consequence of a good-faith report of abuse, and no clinician in the aforementioned AAP study was sued for malpractice as a result of reporting abuse [7; 10].

However, it is possible for dental professionals to be sued, and a state petition for up to $50,000 in recompensatory legal fees is available for dentists having to defend themselves in court [7]. On the other hand, civil or criminal penalties for willfully not reporting abuse or impeding a report when abuse has been found to have occurred include 6 months in jail and/or a fine of $1,000 or, in cases of serious injury/death following a failure to report, 12 months in jail, and/or a fine of $5,000.

ELDER AND DEPENDENT ADULT ABUSE AND NEGLECT

Abusive injuries to the mouth and oral cavity of elder or dependent (e.g., developmentally or physically disabled) adults are similar in type and causation to those sustained by pediatric patients, including trauma from forced feeding, object insertion, mouth gagging, and being slapped, hit, or strangled, but also include damage to and from prostheses. The number of new elder and dependent adult abuse cases is usually about 18,000 per month in California alone, with family members constituting two-thirds of perpetrators [11; 26]. However, researchers estimate that for each incident of reported abuse there are at least five (and perhaps up to 14) unreported incidents [11]. Studies have shown that dental professionals are reluctant to report elder or dependent abuse/neglect and that they have a low index of suspicion of this category of abuse [13].

The national frequency of elder abuse is estimated at up to 10%, with some research indicating that the number may be as high as 1 in 6 [14]. The overwhelming majority of abuse and neglect occurs in domestic, rather than institutional (e.g., residential care) settings, largely due to the shift in care in the 20th century from state institutions to the home (particularly for younger disabled individuals) [12; 14]. However, with an increasing aging population and longer life expectancies, it is projected that by 2030 there will be a 50% increase in the number of older adults who require nursing home care [14]. Women are the victims of elder abuse two-thirds of the time.

Elder and dependent adults are also at risk for poor oral health due to caretaker neglect. In fact, neglect is one of the most common causes of elder injury reporting [14]. These populations are also at a high risk for self-neglect, accounting for more than 500,000 additional reported cases in the United States per year. A 2010 study revealed that 40% of individuals 65 years of age or older suffer from some form of neglect [15].

Elder and Dependent Adult Abuse Laws

Laws pertaining to mandatory elder and dependent adult abuse reporting are found in the California Welfare and Institutions Code Sections 15600 to 15632 [16].

Section 15600. (a) The Legislature recognizes that elders and dependent adults may be subjected to abuse, neglect, or abandonment and that this state has a responsibility to protect these persons.

(i) Therefore, it is the intent of the Legislature in enacting this chapter to provide that adult protective services agencies, local long-term care ombudsman programs, and local law enforcement agencies shall receive referrals or complaints from public or private agencies, from any mandated reporter submitting reports pursuant to Section 15630, or from any other source having reasonable cause to know that the welfare of an elder or dependent adult is endangered, and shall take any actions considered necessary to protect the elder or dependent adult and correct the situation and ensure the individual's safety.

Section 15630. (a) Any person who has assumed full or intermittent responsibility for the care or custody of an elder or dependent adult, whether or not he or she receives compensation, including administrators, supervisors, and any licensed staff of a public or private facility that provides care or services for elder or dependent adults, or any elder or dependent adult care custodian, health practitioner, clergy member, or employee of a county adult protective services agency or a local law enforcement agency, is a mandated reporter.

(b) (1) Any mandated reporter who, in his or her professional capacity, or within the scope of his or her employment, has observed or has knowledge of an incident that reasonably appears to be physical abuse, abandonment, abduction, isolation, financial abuse, or neglect, or is told by an elder or dependent adult that he or she has experienced behavior, including an act or omission, constituting physical abuse, abandonment, abduction, isolation, financial abuse, or neglect, or reasonably suspects that abuse, shall report the known or suspected instance of abuse by telephone or through a confidential Internet reporting tool, as authorized by Section 15658, immediately or as soon as practicably possible. If reported by telephone, a written report shall be sent, or an Internet report shall be made through the confidential Internet reporting tool established in Section 15658, within two working days.

INTIMATE PARTNER VIOLENCE

Intimate partner violence is defined as violence directed at a "spouse, former spouse, cohabitant, former cohabitant, or person with whom the suspect has had a child or is having or has had a dating or engagement relationship" [7]. According to a 2016 to 2017 survey by the Centers for Disease Control and Prevention, severe physical violence by an intimate partner (including acts such as being hit with something hard, being kicked or beaten, or being burned on purpose) has been experienced by an estimated 32.5% of women and 24.6% of men during their lifetimes [17].

Dental professionals should be vigilant in recognizing signs of abuse among adolescent and adult patients. Up to 50% of abusive injuries occur to the head (particularly areas covered with hair) and neck, and facial injuries occur in 94% of intimate partner violence cases and are similar to those already discussed [7; 18]. Again, dental visits may be a patient's only contact with healthcare professionals, making identification of abuse an important part of dental visits [7]. A history of

intimidation, fear, isolation, and dependency is often present in victims of abuse, so it is especially important to determine the origin of orofacial or craniofacial injuries through the use of nonjudgmental questions. The Stanford School of Medicine recommends the following lines of indirect questioning for most age groups [31]:

- How are things going at home?
- What about stress levels? How are things going at work? At home?
- How do you feel about the relationships in your life?
- How does your partner treat you?
- Are you having any problems with your partner?

Alternately, lines of direct questioning may be used [31]:

- Are you afraid of your partner? Do you feel you are in danger?
- You mentioned your partner's problem with temper/stress/drinking. When that happens, has he ever threatened or hurt you?
- Every couple fights at times – what are your fights like at home? Do the fights ever become physical?
- Have you been hit or scared since the last time I saw you?
- Has anyone at home hit you or tried to injure you in any way?
- What kinds of experiences with violence have you had in your life?
- Do you feel controlled or isolated by your partner?
- Does your partner ever try to control you by threatening to hurt you or your family?
- Has anyone close to you ever threatened or hurt you?
- Does your partner ever hit, kick, hurt or threaten you?
- Have you ever been slapped, pushed or shoved by your partner?
- Have you ever been touched in a way that made you feel uncomfortable?
- Has anyone ever made you to do something sexual when you did not want to?
- Has your partner ever refused to practice safe sex?

It is up to the practitioner's judgment which line of questioning to employ. Remember that the objectives are to advocate for and protect the patient. The questions can be framed in a way that does not cause a patient to feel singled out [31]:

- Because unfortunately violence is so common in our society, I have started asking all of my patients about it.
- Because domestic violence has so many effects on health, I now ask all my patients about it.
- From past experience with other patients, I'm concerned that some of your medical problems may be the result of someone hurting you. Is that happening?
- I don't know if this is a problem for you, but many of my patients are dealing with abusive relationships. Some are too afraid or uncomfortable to bring it up themselves, so I've started asking about it routinely.
- Violence affects many families. Violence in the home may result in physical and emotional problems for you and your child. We are offering services to anyone who may be concerned about violence in their home.

When working cross-culturally, it is helpful to learn the colloquialisms used to describe abuse. For example, in some Latino cultures "disrespected me" refers to intimate partner violence or sexual assault [30]. If abuse is suspected and there is a cultural disconnect, consider the assistance of a knowledgeable co-worker, who may be able to act as a cultural broker.

CONCLUSION

Although its primary objective is to safeguard the public, the California Dental Practice Act is an excellent resource for dental professionals to ensure compliance with state law. Dental professionals with a good knowledge of the Dental Practice Act and its effects on dental care will practice legally and safely.

RESOURCES

California Dental Practice Act
https://www.dbc.ca.gov/about_us/lawsregs/laws.shtml

California Dental Association
https://www.cda.org

Dental Hygiene Board of California
https://dhbc.ca.gov

Be sure to transfer your answers to the Answer Sheet located on the envelope insert located between pages 36–37.
DO NOT send these test pages to NetCE. Retain them for your records.
PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.

COURSE TEST - #51294 THE CALIFORNIA DENTAL PRACTICE ACT

This is an open book test. Please record your responses on the Answer Sheet.
A passing grade of at least 70% must be achieved in order to receive credit for this course.

This 2 CE Credit Hour activity must be completed by January 31, 2028.

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AGD Subject Code: 010.

This course meets the Dental Board of California's requirements for 2 units of continuing education. Dental Board of California course #02-3841-00450.

1. **When employed continuously for 120 days or more, an unlicensed dental assistant's employer is responsible for ensuring that they have completed which of the following courses?**
   A) *Infection control*
   B) *Basic life support*
   C) *The California Dental Practice Act*
   D) *All of the above*

2. **A dental hygienist may perform all of the following procedures under general supervision, EXCEPT:**
   A) *Root planing*
   B) *Periodontal charting*
   C) *Oral exfoliative cytology*
   D) *Periodontal soft tissue curettage*

3. **Of the following, who may legally provide dental care in California?**
   A) *An unlicensed dental assistant*
   B) *A dentist with an expired license*
   C) *A dental hygienist with a valid license in another state*
   D) *A dentist who has not recorded his or her fingerprints through the Department of Justice Live Scan system*

4. **All of the following are grounds for having a license suspended, EXCEPT:**
   A) *Employing an unlicensed dentist*
   B) *Unsanitary or unsafe office conditions*
   C) *Practicing dentistry with an expired license*
   D) *Alteration of a patient record without an intent to deceive*

5. **What is the maximum fine and term of imprisonment for a first offense misdemeanor violation of the Dental Practice Act?**
   A) *$200 and 3 months*
   B) *$200 and 6 months*
   C) *$3,000 and 6 months*
   D) *$30,000 and 12 months*

6. **Which of the following dental professionals are permitted to prescribe drugs?**
   A) *Dental assistants*
   B) *Dental hygienists*
   C) *Doctors of dentistry*
   D) *All of the above*

7. **Which of the following are mandated reporters of child abuse?**
   A) *Dental assistants*
   B) *Dental hygienists*
   C) *Doctors of dentistry*
   D) *All of the above*

8. **What percentage of child abuse injuries involve the lips?**
   A) *14%*
   B) *34%*
   C) *54%*
   D) *74%*

9. **All of the following are clinical signs of physical child abuse, EXCEPT:**
   A) *Excessive caries*
   B) *Welts in the shape of household objects*
   C) *A hoarse or raspy voice with evidence of strangulation injury*
   D) *Lacerations of the lips, tongue, buccal mucosa, gingival alveolar mucosa, frenum, or palate*

10. **What percentage of individuals 65 years of age or older suffer from some form of neglect?**
    A) *20%*
    B) *40%*
    C) *60%*
    D) *80%*

Infection Control for Dental Professionals: The California Requirement

This course fulfills the California requirement for 2 hours of Infection Control education.

Audience
This course is designed for all dentists, dental hygienists, and dental assistants in all practice settings, particularly those practicing in California.

Course Objective
The purpose of this course is to familiarize dental professionals with infection control techniques in order to minimize the risks of microbial transmission in the dental healthcare setting.

Learning Objectives
Upon completion of this course, you should be able to:

1. Outline OSHA and Cal/OSHA regulations that impact the provision of dental care.
2. Analyze potential modes of transmission and pathogens that can result in infection in dental facilities.
3. Discuss potential prevention strategies for infection control, including hand hygiene, and personal protective equipment.
4. Describe effective environmental control measures that should be applied in dental care.
5. Identify steps that should be taken to protect dental healthcare personnel, including vaccination, education, and exposure responses.

Faculty
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Faculty Disclosure
Contributing faculty, Mark J. Szarejko, DDS, FAGD, has disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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Division Planner/Director Disclosure
The division planner and director have disclosed no relevant financial relationship with any product manufacturer or service provider mentioned.

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Dental Board of California course #02-3841-00452.

Special Approval
This course fulfills the California requirement for 2 hours of infection control education.

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- Read the following course.
- Complete the test and evaluation.
- Return your Customer Information/Answer Sheet/Evaluation and payment to NetCE by mail or complete online at www.NetCE.com/CADHA25.
- A full Works Cited list is available online at www.NetCE.com.

INTRODUCTION

In 2023, there were more than 751,000 jobs in dental occupations in the United States [1]. In California alone there are approximately 104,000 dental healthcare professionals, including dentists, dental hygienists, and dental assistants [29]. Most of these dental workers come in daily contact with a variety of infectious diseases in their workplace and are at risk for both transmitting and contracting these diseases.

Universal Precautions were originally developed and recommended by the Centers for Disease Control and Prevention (CDC) in the 1980s as an infection control approach to protect healthcare professionals from bloodborne pathogens. Under Universal Precaution recommendations, all human blood and certain bodily fluids are treated as if they are infectious, regardless of patient or setting. In 1996, the CDC expanded these recommendations and introduced Standard Precautions, not only to protect healthcare workers from pathogens in human blood and body fluids but also from pathogens present in bodily fluids that are not covered under Universal Precautions, including saliva during dental procedures. Standard Precautions are the minimum standard of care applied to all patients, and include hand hygiene, use of specific types of personal protective equipment (PPE) based on anticipated exposure, safe injection practices, and management of contaminated environmental items. In addition to Standard Precautions, Transmission-Based Precautions (i.e., Contact Precautions, Droplet Precautions, and Airborne Precautions) are used to prevent transmission of an infectious agent that is not interrupted by Standard Precautions alone. The type of Transmission-Based Precaution used is based on what is known or suspected about a patient's infection.

In California, to address the issue of infection control and reduce the potential for harm, the Dental Board of California (DBC) established a requirement that licensed dental healthcare professionals in California complete a course on infection control and prevention, further expanding the requirement to all dental health personnel (DHCP), defined as [9]:

> ...all paid and non-paid personnel in the dental healthcare setting who might be occupationally exposed to infectious materials, including body substances and contaminated supplies, equipment, environmental surfaces, water, or air. DHCP includes dentists, dental hygienists, dental assistants, dental laboratory technicians (in-office and commercial), students and trainees, contractual personnel, and other persons not directly involved in patient care but potentially exposed to infectious agents (e.g., administrative, clerical, housekeeping, maintenance, or volunteer personnel).

The DBC Infection Control standards require that DHCP comply with and enforce the minimum precautions to minimize the transmission of pathogens in healthcare settings, as set forth by Cal/OSHA. These standards are reviewed by the DBC and Dental Hygiene Committee of California to obtain a consensus on infection control standards. A written protocol should be developed for proper instrument processing, operatory cleanliness, and management of injuries, and a copy of infection control regulations should be conspicuously posted in each dental office [9].

INFECTION CONTROL REGULATIONS

Legal issues first began to impact infection control practices at the beginning of the acquired immunodeficiency syndrome (AIDS) epidemic in the early 1980s. The need to protect healthcare workers from bloodborne exposures resulted in the publication of the Bloodborne Pathogens Standard by OSHA in 1991 [3].

BLOODBORNE PATHOGENS STANDARD

The OSHA Standard requires employers whose employees have exposure to blood or other potentially infectious material (OPIM) to implement safe work practices, education, and barriers to exposure. OPIM includes saliva in dental procedures and all bodily fluid in situations where it is difficult or impossible to differentiate between bodily fluids; any unfixed tissue or organ (other than intact skin) from a human (living or dead); human immunodeficiency virus (HIV)-containing cell or tissue cultures, organ culture and blood, or other tissues from experimental animals [9]

The OSHA Bloodborne Pathogens Standard requires that all DHCP who may have contact on the job with blood or other bodily fluids must receive specific annual education, which includes instruction in the basics of infection control and prevention. Training must also cover bloodborne pathogens, modes of transmission, the proper use of needles, and Transmission-Based Precautions [2; 3].

CALIFORNIA AEROSOL TRANSMISSIBLE DISEASE STANDARD

In 2009, Cal/OSHA adopted the nation's first aerosol transmissible disease (ATD) standard, which remains in effect today. The standard is designed to protect healthcare workers from diseases spread by an airborne or droplet route. The ATD standard requires employers in health care to develop exposure control procedures and train employees to follow those procedures [4]. Basic exposure precautions, such as source screening, infection control, hand hygiene, and cleaning and decontamination procedures, are a fundamental part of the standard. Employees must be included in the periodic review and assessment of these procedures.

According to the California ATD Standard, California dental offices whose patients have suspected or confirmed illnesses that require Airborne or Droplet Precautions, such as tuberculosis (TB) or other respiratory illnesses, must comply with the ATD standards [4]. Key points include:

- Dental employees must be trained to screen patients for ATDs.
- The screening process must be described in a written office procedure.
- Screening must be consistently implemented.
- Elective dental treatment should be deferred until the patient is non-infectious for TB or other diseases requiring Airborne or Droplet Precautions.

A simple screening procedure can be done by the first person who comes in contact with a patient. For example, the patient may be asked "How are you feeling today?" or "Do you have any coughs, fever, or flu-like symptoms?" If the patient is not feeling well or gives a positive answer to any part of the second question, the dental treatment should be rescheduled.

Outpatient dental clinics or offices are not required to comply with this standard if they meet all of the following conditions [4; 21]:

- Dental procedures are not performed on patients identified as ATD cases or suspected ATD cases (e.g., persons with TB or other respiratory illnesses).
- The clinic's injury and illness prevention program includes a written procedure for screening patients for ATDs that is consistent with the CDC guidelines for infection control in dental settings. This procedure must be followed before performing any dental work on a patient.
- Employees have been trained in the screening procedure in accordance with state law.
- Aerosol-generating dental procedures are not performed on a patient identified through the screening procedure as presenting a possible ATD exposure risk unless a licensed physician determines that the patient does not currently have an ATD.

As of 2024, California remains the only state with such a permanent standard; however, the coronavirus disease (COVID) pandemic of 2019–2022 highlighted the need for a standard addressing infectious pathogens spread by aerosols or droplets. During the pandemic, OSHA did issue interim guidance for safe workplaces, and some states issued emergency temporary standards. Experts have called for these requirements to be codified in order to ensure the safety of professions and patients, but this has not yet been accomplished [15]. Full guidance on aerosol-transmissible diseases can be found in the 2023 California Workplace Guide to Aerosol Transmissible Diseases at https://www.dir.ca.gov/dosh/dosh_publications/ATD-Guide.pdf [4].

MODES OF TRANSMISSION

Almost all pathogens are transmitted by being carried from one place to another. The mode or means of transmission is the weakest link in the chain of infection, and it is the only link that can be eliminated entirely. Most infection control efforts are aimed at preventing transmission of pathogens from a reservoir to a susceptible host. Both Standard and Transmission-Based Precautions are designed to interrupt the mode of transmission. ***Table 1*** details the most common modes of infection transmission in dentistry [5; 6; 8].

COMMON MODES OF INFECTION TRANSMISSION	
Category	**Definition**
Direct contact	Person-to-person transmission of pathogens (e.g., through skin, blood, or body fluid contact)
Indirect contact	An intermediate person or item acts as a transport between the portal of exit in one person and the portal of entry to the next person (e.g., via unwashed hands, shared equipment, needlesticks)
Droplets[a]	Large respiratory droplets propelled by an infected person coughing, sneezing, talking, or breathing heavily. Droplets settle rapidly within 6 feet of the individual on surfaces and in the upper airway of individuals exposed via the eyes, nose, or mouth.
Airborne (aerosols)[a]	Small particles or micro-droplets are released into the air by an infected person coughing, sneezing, talking, or breathing heavily. Airborne pathogens can linger for long periods of time and travel longer distances, landing on surfaces and being breathed in by other individuals into the lower airway.
Fomites	Contact with a contaminated inanimate object (e.g., used gloves, pens, used tissues, soiled laundry, keyboards, furniture).
Water	Water may be contaminated by micro-organisms in dental water unit lines, causing patient contamination as well as dispersing infected airborne particles and droplets.
[a]In 2024, a global consensus was reached to replace the terms droplet, airborne, and aerosol with a general umbrella term of "through the air transmission," regardless of infected respiratory particle size and/or distance traveled.	
Source: [5; 6; 8]	*Table 1*

DIRECT AND INDIRECT CONTACT

The most common modes of transmission in the healthcare setting are through contact, both direct and indirect. Because it addresses the weakest link in the chain of transmission, hand hygiene is the single most important procedure for preventing the spread of infection. Items moving between patients should be cleaned and sterilized after each use to avoid indirect transmission of pathogens. Standard Precautions in conjunction with identified Contact Precautions are often used in the dental setting.

Bloodborne Pathogens

Healthcare employees can be exposed to blood through needlestick and other sharps injuries, damaged mucous membranes, and broken skin exposures. The pathogens of primary concern to dental professions are HIV, hepatitis B virus, and hepatitis C virus.

Hepatitis B Virus

Healthcare personnel who have received the hepatitis B vaccine and developed immunity to the virus are at virtually no risk for infection. For a susceptible person, the risk from a single needlestick or cut exposure to hepatitis B-infected blood ranges from 6% to 30%, depending on the hepatitis B antigen status of the source individual. While there is a risk for hepatitis B infection from exposures of mucous membranes or nonintact skin, there is no known risk for infection from exposure to intact skin [5; 10].

Hepatitis C Virus

Hepatitis C is transmitted primarily through percutaneous exposure to infected blood. The average risk for infection after a needlestick or cut exposure to hepatitis C virus-infected blood is approximately 1.8%. The risk following a blood exposure to the eye, nose, or mouth is unknown but is believed to be very small; however, hepatitis C virus infection from blood splashes to the eye has been reported. There also has been a report of hepatitis C virus transmission that may have resulted from exposure to nonintact skin, but there is no known risk from exposure to intact skin. Documented transmission of hepatitis C or hepatitis B virus has resulted from using the same syringe or vial to administer medication to more than one patient, even if the needle was changed [5; 10].

The prevalence of hepatitis C virus infection among dentists and surgeons is similar to that among the general population, approximately 1% to 2% [5]. No studies of transmission from hepatitis C virus-infected DHCP to patients have been reported, and the risk for such transmission appears limited [10].

HIV/AIDS

The average risk of HIV infection after a needlestick or cut exposure to HIV-infected blood is 0.3%; 99.7% of needlestick or cut exposures do not lead to infection. The risk after exposure of the eye, nose, or mouth to HIV-infected blood is estimated to be 0.1%. There have been no documented cases of HIV transmission due to an exposure involving a small amount of blood on intact skin (i.e., a few drops of blood on skin for a short period of time) [5; 10].

In the United States, the risk of HIV transmission in dental settings is extremely low. According to surveillance data from 1981 to 2013, a total of 58 cases of HIV seroconversion had been documented among healthcare personnel after occupational exposure to a known HIV-infected source, but none were among dental care personnel [12].

Certain factors affect the risk of HIV transmission after an occupational exposure. Laboratory studies have determined if needles that pass through latex gloves are solid rather than hollow-bore or are of small gauge (e.g., anesthetic needles), less blood is transferred. In a retrospective, case-control study of healthcare personnel, an increased risk for HIV infection was associated with exposure to a relatively large volume of blood, as with a deep injury with a device that was visibly contaminated with the patient's blood or a procedure that involved a needle placed in a vein or artery [12]. The risk was also increased if the exposure was to blood from patients with terminal illnesses, possibly reflecting the higher titer of HIV in patients with late-stage AIDS.

AEROSOLS, DROPLETS, AND SPLATTER

Aerosols, droplets (produced by the respiratory tract), and splatter contaminated with blood and bacteria are produced during many dental procedures. Devices such as dental handpieces, ultrasonic and sonic scalers, air polishers, air-water syringes, and air abrasion units produce visible aerosol clouds and possible airborne contamination. Splatter generated by dental procedures such as drilling is a primary risk for transmission of bloodborne pathogens. In general, because of their smaller size, aerosols pose the greatest risk for airborne infection [9].

Several studies have shown that airborne or droplet nuclei may extend up to 6 feet away from the source and can remain airborne for up to 30 minutes after a procedure. Tuberculosis (TB) is of special concern because it is a large particle that can remain airborne or can dry on a surface and become airborne again as part of a dust particle.

In 2024, the World Health Organization (WHO) and the Centers for Disease Control and Prevention from the United States, China, Europe, and Africa, published a global consensus of the terminology for pathogens that transmit through the air. Key changes include [8]:

- Any infected particles that are expelled from an individual through nose or mouth are referred to as "infectious respiratory particles" (IRPs).
- IRPs exist on a spectrum of sizes and should no longer be distinguished as "small" (aerosol) or "large" (droplet).
- The descriptor "through the air transmission" should be used to characterize any transmission that involves a pathogen moving through the air or being suspended in the air. Two further descriptors can be used:
- Airborne transmission or inhalation: IRPs are expelled into the air and inhaled by another person. This can occur at short or long distances, dependent on various factors (e.g., airflow, humidity, temperature, ventilation).
- Direct deposition: IRPs are expelled into the air and directly deposited on the exposed mouth, nose, or eyes of another person.

Due to the existing research and recommendations primarily using the terms and definitions of "aerosol" and "droplet," these terms will continue to be used throughout this course, unless otherwise noted.

The American Dental Association recommends that in addition to using Universal and Standard Precautions, such as masks, gloves, and eye protection, Transmission-Based Precautions, including the proper sterilization of instruments and treatment of dental unit waterlines is necessary to reduce or eliminate this source of potentially contaminated dental aerosols. Preprocedural rinsing with an antimicrobial mouthwash such as chlorhexidine is also recommended, although it is only effective for oral bacteria found in saliva and those adhering to mucous membranes. It does not penetrate subgingivally and likely has no effect on bacteria in the nasopharynx [5; 6].

Diseases known to spread by aerosols or droplet include:

- TB
- *Pneumonic Yersinia* pestis infection (plague)
- Influenza
- Legionellosis (Legionnaires disease)
- Measles
- Chickenpox
- Disseminated shingles
- Severe acute respiratory syndrome and coronavirus (SARS and COVID)

Procedures or equipment aimed at eliminating the means of transmission include [5; 6]:

- Universal preprocedural rinses
- Dental dams for certain procedures
- High-volume evacuator (HVE) at the treatment site (An HVE can only remove airborne contamination if it removes a large volume of air. A saliva ejector does not remove enough air to be classified as an HVE.)
- High-efficiency particulate arresting and ultraviolet filters in the ventilation system
- Disposable PPE discarded after each patient (e.g., gloves, masks, gowns)
- Cleaning, disinfection, and sterilization of equipment used by more than one patient
- Environmental cleaning and disinfection, especially of high-touch surfaces

FOMITE TRANSMISSION

Devices can transmit pathogens if they are contaminated with blood or bodily fluids or are shared without cleaning, disinfecting, and sterilizing between patients; these are classified as fomites. Surgical instruments that are inadequately cleaned between patients or that have manufacturing defects that interfere with the effectiveness of reprocessing may transmit bacterial, fungal, and viral pathogens. Clothing, uniforms, laboratory coats, or gowns used as PPE may become contaminated with potential

pathogens after care of a patient colonized or infected with an infectious agent [5; 6; 10].

WATER TRANSMISSION

Dental water units and dental unit waterlines are both potential sources of transmission and potential reservoirs. Routine cleaning and sterilization and adherence to the CDC's recommended procedures for treating dental unit waterlines have been shown to be effective in eliminating transmission of infectious organisms via these devices. Infections known to be caused by dental-related water transmission include *Pseudomonas aeruginosa*, *Mycobacterium avium*, and *Legionella pneumophila* [5; 7].

STANDARD PRECAUTIONS

In 1986, California became the first state to pass a comprehensive bloodborne pathogen standard. The California standard provided a model for federal legislation, and in 1991, OSHA published its Bloodborne Pathogens Standard [3; 30]. Since then, regulatory and legislative activity has focused on implementing a hierarchy of prevention and control measures to improve infection control in healthcare settings.

The gradual acceptance of various infection prevention standards has changed the way we work in the provision of dental care. The DBC defines Standard Precautions as "a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered" [9]. The DBC mandates that Standard Precautions must be practiced in the care of all patients, and all body fluids, except sweat, are considered potentially infectious [9]. The use of Standard Precautions reduces the risk of infection to staff and patients and ensures that the right precautions are used with both known and unknown carriers of diseases due to bloodborne pathogens. Standard Precautions apply to contact with blood, intact or nonintact skin, mucous membranes, and all bodily fluids, secretions, and excretions (except sweat), regardless of whether they contain blood. A central tenet of Standard Precautions is to consider all patients to be potentially infected with a bloodborne pathogen. Saliva has always been considered a potentially infectious material in dental infection control; thus, no operational difference exists in clinical dental practice between Universal Precautions and Standard Precautions. For organisms other than bloodborne pathogens, early identification and prompt isolation are critical.

As noted, Standard Precautions are the minimum infection prevention practices that apply to all patient care, regardless of health or dental care setting, and include [5]:

- Utilization of effective hand hygiene
- Use of PPE (e.g., gloves, masks, eyewear)
- Respiratory hygiene, including cough/sneeze etiquette
- Sharps safety (engineering and work practice controls)
- Safe injection practices (aseptic technique)
- Cleaning, sterilization, and disinfection of instruments and devices
- Cleaning and disinfection of environmental surfaces

HAND HYGIENE

Despite the simplicity and effectiveness of hand hygiene in preventing the spread of infectious disease, adherence to hand hygiene practice remains low. Adherence varies among professional categories of healthcare workers but is usually estimated at less than 50%. Healthcare providers may be required to clean their hands as many as 100 times in a 12-hour shift, depending on the number of patients and intensity of care [14; 17]. For dental healthcare workers, strict adherence to proper hand hygiene is the most important prevention strategy to protect both the patient and the worker. In one study, adherence rates to hand hygiene among postgraduate-year dentists found that overall handwashing compliance rate was 34.7%, with higher rates of compliance noted in oral surgery services (92.8%) than during work in general clinical practice (34.2%) [13]. The World Health Organization has designed the guidelines 5 Moments for Hand Hygiene as a reminder of when proper hand hygiene should be completed [11]:

1. Before touching a patient
2. Before a procedure
3. After a procedure or exposure to body fluids
4. After touching a patient
5. After touching a patient's surroundings

In general, perform hand hygiene [14]:

- After contact with any bodily fluids, including your own
- Before any non-invasive or invasive procedure
- Each time you remove your gloves
- When your hands feel or look dirty
- After contact with contaminated things or environments, such as charts
- After handling used equipment or linen
- After using the bathroom
- Before contact with any portal of entry, your patient's or your own
- Before and after eating

A number of conditions restrict DHCP from participating in direct patient care. These include weeping dermatitis, exudative lesions, or any hand condition that increases the risk of disease transmission [9].

Good handwashing is difficult to practice, is rarely known or taught, and is one of the single most effective ways to prevent transmission of many diseases, including influenza. Everyone knows to wash their hands before eating and after using the restroom. However, few do little more than remove obvious dirt. Good handwashing involves removing the skin oils where organisms can remain even when the hands look clean. A

quick pass under the water faucet and fast dry with a towel may remove visible dirt, but the oils and organisms remain.

To effectively remove the oils and organisms, the process should take at least 20 seconds, or the amount of time it takes to sing "Twinkle, Twinkle Little Star." The hands should be soaped and rubbed vigorously for 15 seconds to create a good lather and to assure that all parts of each hand are soaped and rubbed well. Then, the hands should be rinsed thoroughly and dried, preferably with a paper towel. The towel should be used to turn off the water faucet and then properly thrown away. However, 20 seconds is a long time in the busy life of a healthcare provider, and this 20 seconds has been identified as a major barrier to handwashing, particularly among those who consider themselves "too busy" to wash their hands. If there is no visible dirt or contamination, a waterless hand sanitizer with at least 60% alcohol can be used between patients. However, nothing is as good as washing well with soap and water. Further, some organisms are not eliminated through the use of hand sanitizers alone (e.g., *Clostridioides difficile* spores). Hands should be thoroughly dried before donning gloves and washed again immediately after glove removal [9].

Some mistakenly think that hot water must be used to kill the organisms. Water hot enough to kill organisms would be too hot to touch. Warm water softens oils but mainly adds to comfort and encourages better washing technique (i.e., longer duration). Careful attention to handwashing and cleansing may result in chapped skin, so the dental professional must find effective lotions to care for his/her hands [14; 17].

Certain soaps contain stronger antiseptic compounds, such as chlorhexidine, and these soaps may be considered in cases in which exposure to potentially infectious material is likely. Antiseptic soaps or surgical preparation liquids have been found more effective than plain soap in removing bacteria from healthcare workers hands both pre- and postprocedure. In addition, antiseptics may be added to alcohol-based handrubs in order to achieve persistent germicidal activity. Possible side effects associated with frequent use of antiseptic hand scrubs include skin irritation, dermatitis, allergic reactions, and potential development of microbial resistances. Chlorhexidine products are considered safe for regular use in dental practice; however, if associated side effects are bothersome, they may result in decreased hand hygiene compliance [10; 14].

In summary, start and end each work day using an antibacterial soap. Gloves provide a breeding ground for microbial growth, and washing before and after use is encouraged. If hands are not visibly soiled, a waterless hand sanitizer (at least 60% alcohol) may be used. For surgical procedures, wash hands with antimicrobial soap prior to gowning and gloving [5].

PERSONAL PROTECTIVE EQUIPMENT

PPE is defined as special coverings designed to protect healthcare personnel from exposure to or contact with infectious agents [18]. Cal/OSHA regulations require use of PPE in dental care settings to protect personnel from exposure to bloodborne pathogens and other OPIM [9]. Under OSHA's General Duty Clause, PPE is also required for any potential infectious disease exposure. Employers must provide their employees with appropriate PPE and ensure its proper disposal. If reusable, it must be properly cleaned or laundered, repaired, and stored after use [19]. PPE must fit the individual user, and it is up to the employer to ensure that PPE is available in sizes appropriate for all their workers. Employees are prohibited from taking PPE home to launder.

In addition to the familiar gloves, masks, and gowns, PPE includes a variety of barriers and respirators used alone or in combination to protect skin, mucous membranes, and airways from contact with infectious agents. The selection of PPE is based on the nature of the patient/provider interaction and the likely mode of transmission. Primary PPE used in oral healthcare settings includes gloves, surgical masks, respiratory devices, protective eyewear, face shields, and protective shoes and clothing.

Procedures that can generate splashes or sprays of blood, bodily fluids, secretions, excretions, or chemical agents require either a face shield (disposable or reusable) or mask and goggles. The wearing of masks, eye protection, and face shields in specified circumstances (when blood or OPIM exposures are likely to occur) is mandated by the OSHA Bloodborne Pathogens Standard. Sterile barriers for invasive procedures and masks or respirators for the prevention of droplet contamination are also required [2].

The use of PPE is not a substitute for safe work practices. Avoid contaminating yourself by keeping your hands away from your face and not touching or adjusting equipment. PPE is a potential means of transmission if not changed between patients. All PPE should be removed when leaving patient care areas.

Gloves

DHCP should wear medical exam gloves to prevent contamination of their hands when touching mucous membranes, blood, saliva, or OPIM [9]. Gloves reduce the likelihood that micro-organisms present on the hands will be transmitted to patients during surgical or other patient-care procedures. Gloves used in the healthcare setting are subject to U.S. Food and Drug Administration (FDA) evaluation and clearance. Nonsterile, disposable medical gloves made of latex or nitrile should be available for routine patient care. Dental personnel should always use gloves when [18]:

- Anticipating direct contact with blood or bodily fluids, mucous membranes, nonintact skin, and OPIM
- Engaging in direct contact with patients who are colonized or infected with pathogens transmitted by the contact route, such as vancomycin-resistant enterococci or methicillin-resistant *Staphylococcus aureus* (MRSA)
- Handling or touching visibly or potentially contaminated patient care equipment and environmental surfaces

Studies have repeatedly shown that vinyl gloves have higher failure rates than latex or nitrile gloves. For this reason, either latex or nitrile gloves are preferable for clinical procedures that require manual dexterity or those involving more than brief patient contact. Heavier, reusable utility gloves should be used for non-patient-care activities, such as handling or cleaning contaminated equipment or surfaces, handling chemicals, or disinfecting contaminated tools [9; 18].

During dental procedures, patient examination gloves commonly contact multiple types of chemicals and materials, such as disinfectants and antiseptics, composite resins, and bonding agents, and these materials can compromise the integrity of latex, nitrile, and other synthetic glove materials. In addition, latex gloves can interfere with the setting of vinyl polysiloxane impression materials. Given the diverse selection of dental materials on the market, dental practitioners should consult glove manufacturers regarding the chemical compatibility of glove materials [5; 18].

Wearing sterile surgeon's gloves during surgical procedures has a strong theoretical rationale. Sterile gloves minimize transmission of micro-organisms from the hands of surgical personnel to patients and prevent contamination of the hands of surgical personnel with the patient's blood and bodily fluids. In addition, sterile surgeon's gloves are more rigorously regulated by the FDA and may provide an increased level of protection for the provider if exposure to blood is likely [10; 18].

Gloves should be removed and replaced if torn or punctured and discarded between patients to prevent transmission of infectious material. They should never be washed and reused, as micro-organisms cannot be removed reliably from glove surfaces. Glove reuse has been associated with transmission of MRSA and gram-negative bacilli [9; 10].

When gloves are worn in combination with other PPE, they should be put on last. Gloves that fit snugly around the wrist are preferred for use with a gown because they will cover the gown cuff and provide a more reliable continuous barrier for the arms, wrists, and hands. Removing gloves properly also prevents hand contamination. Hand hygiene following glove removal ensures that the hands will not carry potentially infectious material that might have penetrated through unrecognized tears or contaminated the hands during glove removal. When processing contaminated sharp instruments, needles, and devices, heavy utility gloves should be used to prevent puncture injuries [10; 18].

When adhering to Standard Precautions, always [5]:

- Use good hand hygiene.
- Use gloves for contact with blood, bodily fluids, nonintact skin (including rashes), mucous membranes, used equipment, linens, and trash.
- Change gloves if they become heavily soiled when working on a patient or if you must go from a potentially more infective area to a lesser one.

In addition, never:

- Wear artificial fingernails.
- Touch a second patient with the same pair of gloves used on the first patient.
- Contaminate the environment with dirty gloves.
- Wear gloves outside the treatment area unless you can say why you are wearing them.

Protective Clothing

Gowns are intended to protect the arms and exposed body areas and prevent contamination of clothing with blood, bodily fluids, and OPIM. The type of gown selected is based on the nature of the patient/provider interaction, including the anticipated degree of contact with infectious material and potential for blood and bodily fluid penetration of the barrier. General work clothes (e.g., uniforms, scrubs, laboratory coats, jackets) are not considered PPE. Dental personnel should change protective clothing when it becomes visibly soiled or as soon as possible if penetrated by blood or other possibly infectious fluid [18].

California regulations require that all DHCP wear reusable or disposable protective attire when their clothing or skin is likely to be exposed to aerosol spray or splashing or spattering of blood, OPIM, or chemicals and germicidal agents. Gowns must be changed daily or between patients if they become moist or visibly soiled. All PPE used during patient care shall be removed when leaving laboratories or areas of patient care activities. Reusable gowns should be laundered in accordance with Cal/OSHA Bloodborne Pathogens Standards. In addition, gowns should be worn for disinfection, sterilization, and housekeeping procedures involving the use of germicides or handling contaminated items [9].

Masks, Protective Eyewear, and Face Shields

In California, DHCP are required to wear surgical masks that cover both the nose and mouth, in combination with either chin-length plastic face shields or protective eyewear when there is potential for splashing or spattering of blood, droplets, chemical, or germicidal agents, or OPIM. After each patient, masks should be changed and disposed of properly. After each patient treatment, face shields and protective eyewear shall be disposed or cleaned and disinfected [9; 18].

Masks should fit snugly and fully cover the nose and mouth to prevent fluid penetration. For this reason, masks that have a flexible nose piece and can be secured to the head with string ties or elastic are preferable. Surgical masks protect against micro-organisms generated by the wearer and also protect dental personnel from large-particle droplet spatter that might contain bloodborne pathogens or OPIM. If the mask becomes wet or contaminated, it should be changed between patients or even during patient treatment. For employees at increased risk of exposure to ATDs, such as those working in endemic areas (e.g., Southeast Asia) or in areas designated for isolation or quarantine, the employer must provide a respirator at least as effective as an N95 respirator.

Most surgical masks are not National Institute for Occupational Safety and Health (NIOSH)-certified as respirators, do not protect the user adequately from exposure to TB, and do not satisfy OSHA requirements for respiratory protection. However, certain surgical masks (i.e., N95 respirators) do meet the requirements and are certified by NIOSH. The level of protection a respirator provides is determined by the efficiency of the filter material for incoming air (e.g., 95% for N95) and how well the face piece fits or seals to the face. N95 respirators are required to be labeled as such on the device.

Respirators are used when treating patients with diseases requiring Airborne Precautions and should be used in the context of a complete respiratory protection program. This program should include training and fit testing to ensure an adequate seal between the edges of the respirator and the wearer's face.

Goggles with side shields provide barrier protection for the eyes and should fit snugly over and around the eyes or personal prescription lenses. Personal prescription lenses do not provide optimal eye protection and should not be used as a substitute for goggles. If goggles or face shields are reusable, they must be placed in a designated receptacle for subsequent reprocessing. If they are not reusable, they may be discarded in a designated waste receptacle.

Face shields extending from chin to crown provide better face and eye protection from splashes and sprays than goggles. Shields that wrap around the sides may reduce splashes around the edge. Removal of a face shield, goggles, and mask can be performed safely after gloves have been removed and hand hygiene performed. The ties, earpieces, or headband used to secure the equipment to the head are considered clean and therefore safe to touch with bare hands. The front of the face shield is considered contaminated [10; 18].

RESPIRATORY HYGIENE

If dental clinics and offices comply with state regulations for screening of patients with ATDs, they are not required to comply with the new standards for prevention of transmission of ATDs [4]. However, because no screening process is universally effective, dental personnel should be aware of the potential dangers associated with transmission of pathogens via the airborne and droplet routes.

Respiratory droplets can transmit infection when they travel directly from the respiratory tract of the infected individual to the mucosal surfaces of the recipient, generally over short distances (i.e., 6 feet or less). Airborne transmission occurs with only a few organisms that can survive the drying of respiratory droplets. When the droplets evaporate, they leave behind droplet nuclei, which are so small they remain suspended in the air and can travel over longer distances. Respiratory droplets and droplet nuclei are generated when an infected person coughs, sneezes, or talks during procedures. Facial masks or shields generally provide direct protection from droplet transmission. Some pathogens transmitted via the airborne route (e.g., TB) require the use of an N95 respirator or better (e.g., N99, N100) due to the small particle size [5].

Measures to contain respiratory secretions in symptomatic patients and accompanying adults may include [5; 18]:

- Post signs to instruct patients with known or suspected respiratory infection to cover mouth and nose when sneezing or coughing, use and properly dispose of tissues, and wash hands after sneezing or coughing.
- Provide tissues and no-touch receptacles.
- Have handwashing stations or hand sanitizer available in waiting areas.
- Offer masks to patients and accompanying adults.
- Provide ample space in waiting areas, or consider placing symptomatic patients in a separate waiting area.

ENGINEERING AND WORK PRACTICE CONTROLS (SHARPS SAFETY)

Most percutaneous injuries among DHCP involve scalers, burs, needles, wires, and sharp instruments. In 2000, the Federal Needlestick Safety and Prevention Act authorized OSHA to revise its Bloodborne Pathogens Standard to require the use of safety-engineered sharp devices in healthcare settings [2; 3; 16]. Guidelines on the design, implementation, and evaluation of a sharps injury prevention program have been developed by the CDC, and outline engineering controls and work practice controls as primary methods to prevent such occurrences. Engineering controls, such as sharps disposal containers, self-sheathing needles, and safer medical devices (e.g., sharps with engineered sharps injury protections and needleless systems) isolate or remove the bloodborne pathogens hazard from the workplace. On the other hand, work practice controls reduce the likelihood of exposure by specifying the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

Engineering and work practice controls are intended to work synergistically to eliminate or minimize employee exposure. These controls must be examined and maintained or replaced on a regular basis to ensure their effectiveness. To maintain a safe workplace, employers must provide handwashing facilities that are readily accessible to employees.

Contaminated needles and other contaminated sharps should not be bent, recapped, or removed unless the employer can demonstrate that there is no alternative or that such action is required by a specific procedure. Necessary bending, recapping, or needle removal must be accomplished through the use of a mechanical device or a one-handed scoop technique. Shearing or breaking of contaminated needles is prohibited. Immediately, or as soon as possible after use, contaminated reusable sharps (e.g., scalpels, dental knives) must be placed in appropriate containers until properly reprocessed. These containers must be [9; 10]:

- Puncture resistant
- Labeled or color-coded
- Leak-proof on the sides and bottom
- Maintained in accordance with OSHA requirements for reusable sharps
- Designed so personnel are not required to reach by hand into the container
- Located as close as possible to the point of use

SAFE INJECTION PRACTICES (ASEPTIC TECHNIQUE)

Safe injection practices are designed to prevent disease transmission within the healthcare setting. The absence of visible blood or other signs of contamination in a used syringe does not mean the item is free from potentially infectious agents. Bacteria and other microbes can be present without any visible evidence of contamination. All used injection supplies and materials should be considered potentially contaminated and should be discarded.

To ensure safe injection practices, use aseptic technique throughout all aspects of injection preparation and administration. Aseptic technique involves the handling, preparation, and storage of medications in a manner that prevents microbial contamination. It also applies to the handling of all supplies used for injections and infusions. To avoid contamination, medications should be drawn in a clean medication preparation area. Any item that may have come in contact with blood or OPIM should be kept separate from medications. In addition, eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure. Food and drink should not be kept in refrigerators, freezers, shelves, or cabinets or on countertops where blood or OPIM is present.

A new, sterile syringe and needle should be used to draw up medications while preventing contact between the injection materials and the nonsterile environment. Practice proper hand hygiene before handling medications, and discard medication vials upon expiration or any time there are concerns regarding the sterility of the medication [5].

Never leave a needle or other device inserted into a vial or bottle for multiple uses. This provides a direct route for micro-organisms to enter the vial and contaminate the fluid. Medications should never be combined between vials or administered from the same syringe to more than one patient, even if the needle is changed. Multidose vials should be used on a single patient whenever possible and should never enter the immediate patient treatment area [5].

Dental personnel should follow proper technique when using and handling needles, cannulae, and syringes. Whenever possible, use sharps with engineered sharps injury protections (e.g., non-needle or needle devices with built-in safety features or mechanisms that effectively reduce the risk of an exposure incident). Do not disable or circumvent the safety feature on devices [5].

Cases of bloodborne pathogen transmission as a result of improper injection practices have common themes. Often, aseptic technique and Standard Precautions were not carefully followed. Infection control programs may be lacking or responsibilities unclear. In several instances, failure to recognize an infection control breach has led to prolonged transmission and a growing number of infected patients. In all cases, investigations were time-consuming and costly and required the notification, testing, and counseling of hundreds and sometimes thousands of patients [5; 16].

STERILIZATION AND DISINFECTION OF PATIENT-CARE ITEMS AND DEVICES

Application of accepted infection control principles helps maintain a safe environment for both patients and dental care workers. This includes proper use of Standard Precautions and application of approved techniques for cleaning, disinfection, sterilization, and reprocessing of dental equipment. Healthcare policies must identify—primarily on the basis of an item's intended use—whether cleaning and disinfection or sterilization is indicated (***Table 2***) [9; 10; 21].

Cleaning is defined as the removal of visible soil (organic and inorganic material) debris and OPIM from objects and surfaces; normally, it is accomplished manually or mechanically using water with detergents or enzymatic products [9]. Cleaning must precede any disinfection or sterilization process.

Decontamination reduces the number of pathogenic micro-organisms on objects, usually with a 0.5% chlorine solution [21]. Thorough cleaning and decontamination are essential before high-level disinfection and sterilization because inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of these processes.

Disinfection is a process that eliminates many or all pathogenic micro-organisms, except bacterial spores, on inanimate objects. In healthcare settings, objects are usually disinfected using liquid chemicals or wet pasteurization (i.e., the use of hot water to destroy micro-organisms). There are three levels of disinfection [9; 10]:

- High-level disinfection: Used to disinfect patient-care equipment that touches mucous membranes or blood.
- Intermediate-level disinfection: Used mainly to disinfect items that have contact with intact skin, but is appropriate for certain semicritical items (e.g., chair arms).
- Low-level disinfection: Used to disinfect the healthcare environment or items that touch intact skin.

METHODS FOR STERILIZING AND DISINFECTING PATIENT-CARE ITEMS AND ENVIRONMENTAL SURFACES

Process	Result	Method	Examples	Patient-Care Items	Environmental Surfaces
Sterilization	Destroys all forms of viable micro-organisms, including bacterial spores.	Heat-automated, high temperature	Steam, dry heat, unsaturated chemical vapor	Heat-tolerant critical and semicritical	NA
		Heat-automated, low temperature	Ethylene oxide gas, plasma sterilization	Heat-sensitive critical and semicritical	
		Liquid immersion[a]	Glutaraldehyde, glutaraldehydes with phenols, hydrogen peroxide, hydrogen peroxide with peracetic acid, peracetic acid		
High-level disinfection	Destroys all micro-organisms, but not necessarily high numbers of bacterial spores.	Heat-automated	Washer disinfector	Heat-sensitive semicritical	NA
		Liquid immersion[a]	Glutaraldehyde, glutaraldehydes with phenols, hydrogen peroxide, hydrogen peroxide with peracetic acid, ortho-phthalaldehyde		
Intermediate-level disinfection	Destroys vegetative bacteria and most fungi and viruses. Inactivates *Mycobacterium bovis*[b]. Not necessarily capable of killing bacterial spores.	Liquid contact	EPA-registered hospital disinfectant with label claim of tuberculocidal activity (e.g., chlorine-containing products, quaternary ammonium compounds with alcohol, phenolics, bromides, iodophors, EPA-registered chlorine-based product)	Noncritical with visible blood	Clinical contact surfaces, blood spills on housekeeping surfaces
Low-level disinfection	Destroys most vegetative bacteria and certain fungi and viruses. Does not inactivate *Mycobacterium bovis.*	Liquid contact	EPA-registered hospital disinfectant with no label claim regarding tuberculocidal activity. OSHA also requires label claim of HIV and HBV potency for use of low-level disinfectant for use on clinical contact surfaces (e.g., quaternary ammonium compounds, some phenolics, some iodophors)	Noncritical without visible blood	Clinical contact surfaces, housekeeping surfaces

[a]Contact time is the single critical variable distinguishing the sterilization process from high-level disinfection with FDA-cleared liquid chemical sterilants. High-level disinfection uses shorter submersion times.
[b]Inactivation of the more resistant *Mycobacterium bovis* is used as a benchmark to measure germicidal potency.

Source: [9; 10; 21] *Table 2*

Surface disinfection is an important part of environmental cleaning. Most bacteria and mycobacteria (e.g., TB) survive for several months on dry surfaces [20]. Respiratory viruses, such as coxsackie or influenza, can persist on surfaces for a few days. Hepatitis viruses and HIV can persist for more than one week, and herpes viruses have been shown to persist from only a few hours up to seven days [20]. All surfaces in patient care areas should be cleaned then disinfected according to the manufacturer's instructions and allowed to dry completely.

Sterilization is a process that destroys or eliminates all forms of microbial life and is carried out in healthcare facilities by physical or chemical methods. Sterile and nonsterile are absolute concepts. If a sterile item is touched by anything nonsterile, the formerly sterile item is contaminated.

The sterilization area should be separate from any patient care or staff break areas. The sterilization section of the processing area should include the sterilizers and related supplies, with adequate space for loading, unloading, and cool down [10]. The

area can also include incubators for analyzing spore tests and enclosed storage for sterile items and single-use items. Manufacturer and local building code specifications will determine placement and room ventilation requirements.

According to the CDC guideline, heat-tolerant dental instruments usually are sterilized by steam under pressure (autoclaving), dry heat, or unsaturated chemical vapor [10]. All sterilization should be performed by using medical sterilization equipment cleared by the FDA. The sterilization times, temperatures, and other operating parameters recommended by the manufacturer of the equipment used, as well as instructions for correct use of containers, wraps, and chemical or biological indicators, should always be followed [10]. Sterilization most often fails due to overloading.

Devices being sterilized should first be cleaned, as debris interferes with the sterilization process. If an ultrasonic unit is utilized, it should be covered while actively in use. Instruments should be fully dry prior to packaging and storage.

Storage practices for wrapped sterilized instruments can be either date- or event-related. Packages containing sterile supplies should be inspected before use to verify barrier integrity and dryness. Although some facilities continue to date every sterilized package and use shelf-life practices, other facilities have switched to event-related practices [10]. This approach recognizes that the product should remain sterile indefinitely, unless an event causes it to become contaminated (e.g., torn or wet packaging). Even for event-related packaging, the date of sterilization should be placed on the package, and if multiple sterilizers are used in the facility, the sterilizer used should be indicated on the outside of the packaging material to facilitate the retrieval of processed items in the event of a sterilization failure [10]. If packaging is compromised, the instruments should be re-cleaned, sterilized again, and packaged in new wrap.

Categorizing Patient-Care Items

Patient-care items (e.g., dental instruments, devices, and equipment) are categorized using the Spaulding classification system as critical, semicritical, or noncritical, depending on the potential risk for infection associated with their intended use.

Critical items are those items that enter sterile spaces, such as soft tissue or bone, or items that come into contact with the bloodstream. These items pose the greatest risk of transmitting infection and require sterilization. Examples of critical dental instruments include surgical instruments, periodontal scalers, scalpel blades, and surgical dental burs [9; 10]. Critical instruments, items, and devices should be discarded or pre-cleaned, packaged or wrapped, and sterilized after each use. Methods of sterilization include steam under pressure (autoclaving), chemical vapor, and dry heat. If a critical item is heat-sensitive, it should, at minimum, be processed with high-level disinfection and packaged or wrapped after disinfection. These instruments, items, and devices shall remain sealed and stored in a manner so as to prevent contamination and shall be labeled with the date of sterilization and the specific sterilizer used if more than one sterilizer is utilized in the facility [9].

Semicritical items touch intact mucous membranes or nonintact skin and have a lower risk of transmission. Examples of semicritical dental instruments include mouth mirrors, amalgam condensers, reusable dental impression trays, and dental handpieces. Because the majority of semicritical items in dentistry are heat-tolerant, they should be sterilized using heat. If a semicritical item is heat-sensitive, it should, at a minimum, be processed with high-level disinfection, which kills all microbial life except spores [9; 10; 21]. Semi-critical instruments, items, and devices should be pre-cleaned, packaged or wrapped, and sterilized after each use. Methods of sterilization include autoclaving, chemical vapor, and dry heat. If a semi-critical item is heat sensitive, it should, at minimum, be processed with high-level disinfection and packaged or wrapped upon completion of the disinfection process. These packages or containers shall remain sealed, shall be stored in a manner so as to prevent contamination, and shall be labeled with the date of sterilization and the specific sterilizer used if more than one sterilizer is utilized in the facility [9].

Noncritical items pose the least risk of transmission of infection and include devices, equipment, and surfaces that come in contact with soil, debris, saliva, blood, OPIM, and intact skin, but not mucous membranes [9]. Noncritical items include radiograph heads/cones, blood pressure cuffs, facebows, and pulse oximeters. In the majority of cases, cleaning and disinfection with a California Environmental Protection Agency (CalEPA)-registered hospital low-level disinfectant labeled effective against HBV and HIV is adequate. When the item is visibly contaminated with blood or OPIM, a CalEPA-registered hospital intermediate-level disinfectant with a tuberculocidal claim (i.e., intermediate-level disinfectant) should be used [9; 10].

High-speed dental hand pieces, low-speed hand pieces, rotary components and dental unit attachments (e.g., reusable air or water syringe tips and ultrasonic scaler tips) shall be packaged and heat-sterilized in a manner consistent with the same sterilization practices as a semi-critical instrument or item [9]. Single-use disposable items such as prophylaxis angles, cups, brushes, tips for high-speed evacuators, saliva ejectors, air and water syringe tips, and gloves must be used for one patient only and discarded. California requires proper functioning of the sterilization cycle of all sterilization devices be verified at least weekly through the use of a biologic indicator (such as a spore testing monitor). Test results should be documented and maintained for 12 months [9]. Studies have demonstrated variability among dental practices in meeting sterilization standards. In one study, 49% of respondents did not challenge autoclaves with biological indicators. Other studies using biologic indicators found a high proportion (15% to 65%) of positive spore tests after assessing the efficacy of sterilizers used in dental offices [21].

Laboratory Areas

According to California regulations, splash shields and equipment guards should be used on dental laboratory lathes. Fresh pumice and a sterilized or new ragwheel should be used for each patient. Devices used to polish, trim, or adjust contaminated intraoral devices must be disinfected or sterilized and stored in a manner so as to prevent contamination [9].

All intraoral items, such as impressions, bite registrations, and prosthetic or orthodontic appliances, must be cleaned and disinfected with an intermediate-level disinfectant before manipulation in the laboratory and before placement in the patient's mouth. Such items should be thoroughly rinsed prior to placement in the patient's mouth [9].

Reprocessing Reusable Medical Equipment

Reusable instruments, medical devices, and equipment should be managed and reprocessed according to recommended and appropriate methods. Industry guidelines as well as equipment and chemical manufacturer recommendations should be used to develop and update reprocessing policies and procedures. Written instructions should be available for each instrument, medical device, and equipment reprocessed. The FDA has issued guidance on ensuring the safety of reusable medical devices [23].

All procedures involving blood or OPIM must be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances. Splatter shields should be used on medical equipment associated with risk-prone procedures.

Equipment that may become contaminated with blood or OPIM must be examined before servicing or shipping and should be decontaminated as necessary, unless the employer can demonstrate that decontamination of such equipment or portions of such equipment is not feasible. A readily observable label should be attached to the equipment stating which portions remain contaminated. The employer must ensure that this information is conveyed to all affected employees, the servicing representative, and the manufacturer before handling, servicing, or shipping, so appropriate precautions may be taken.

Single-Use Devices

A single-use device is a device that is intended for use on a single patient during a single procedure. An unused single-use device is referred to as an original device. A reprocessed single-use device is an original device that has previously been used on a patient and has been subjected to additional processing and manufacturing for the purpose of an additional single use on a patient [22].

Dental Unit Waterlines, Biofilm, and Water Quality

Studies have shown that dental unit waterlines, such as narrow-bore plastic tubing that carries water to high-speed handpieces, air/water syringes, and ultrasonic scalers, can become colonized with micro-organisms, including bacteria, fungi, and protozoa. Protected by a polysaccharide layer known as a glycocalyx, these micro-organisms colonize and replicate on the interior surfaces of the tubing and form a biofilm. This biofilm serves as a reservoir that can increase the number of micro-organisms in the water used during dental treatment [10].

California regulations require that dental unit water lines be anti-retractive, to prevent patient material, such as oral micro-organisms, blood, and saliva, from entering a dental water system during treatment. These dental unit lines and devices should be purged with air or flushed with water at the beginning of the clinic day for at least two minutes prior to attaching handpieces, scalers, air water syringe tips, or other devices [9]. The dental unit lines and devices should be flushed between each patient for a minimum of 20 seconds [9]. Commercial devices and procedures shown to improve the quality of water used in dental treatment include self-contained water systems with chemical treatment, in-line microfilters, and combinations of these treatments. Simply using tap, distilled, or sterile water will not eliminate bacterial contamination in treatment water if biofilms in the system are not controlled. Microbial load should be less than or equal to 500 colony-forming units of heterotrophic bacteria per milliliter (≤500 CFU/mL) of water, the standard set for drinking water by the EPA [7]. Removal or inactivation of dental waterline biofilms requires use of chemical germicides. California law defines "germicide" as a chemical agent that can be used to disinfect items and surfaces based on the level of contamination. All germicides must be used in accordance with intended use and label instructions [9].

Regarding irrigation, if a surgical procedure involves soft tissue or bone, California regulations require the use of sterile coolants or irrigants, delivered using a sterile delivery system [9]. In addition, a new infection control standard that took effect in 2019, requires that water or other methods for irrigation must be sterile or contain recognized disinfecting or antibacterial properties when performing procedures on exposed dental pulp. Appropriate oral irrigants include chlorhexidine, BioPure MTAD, and sodium hypochlorite [33]. This requirement was in response to a 2016 outbreak of mycobacterial infection from a Southern California dental clinic that led to the hospitalization of more than 60 children. The cause was determined to be bacteria introduced through water during pulpotomies [33].

CLEANING AND DISINFECTION OF ENVIRONMENTAL SURFACES

As discussed, contaminated surfaces and objects can serve as the means of transmission for potential pathogens. The transfer of a micro-organism from an environmental surface to a patient is largely via hand contact with the surface. Although hand hygiene is important to minimize the impact of this transfer, cleaning and disinfecting environmental surfaces is fundamental in reducing their potential contribution to the incidence of infections [10].

All work areas, including contact surfaces and barriers, must be maintained in a clean and sanitary condition. Employers

are required to determine and implement a written schedule for cleaning and disinfection based on the location, type of surface to be cleaned, type of soil present, and tasks or procedures being performed. All equipment and environmental and working surfaces must be properly cleaned and disinfected after contact with blood or OPIM.

If non-critical items or surfaces likely to be contaminated are manufactured in a manner preventing cleaning and disinfection, they should be protected with disposable impervious barriers. Disposable barriers should be changed when visibly soiled or damaged and between patients. Products used to clean items or surfaces prior to disinfection procedures shall be clearly labeled and follow all material safety data sheet (MSDS) handling and storage instructions. Clean and disinfect all clinical contact surfaces that are not protected by impervious barriers using a CalEPA-registered, hospital grade low- to intermediate-level disinfectant after each patient. The low-level disinfectants used must be labeled effective against hepatitis B virus and HIV. Use disinfectants in accordance with the manufacturer's instructions. Clean all housekeeping surfaces (e.g., floors, walls, sinks) with a detergent and water or a CalEPA-registered, hospital-grade disinfectant. Chemical-resistant utility gloves should be worn when handling hazardous chemicals [9].

Medical Waste Management

Federal, state, and local guidelines and regulations specify the categories of medical waste subject to regulation and outline the requirements associated with treatment and disposal [9]. Regulated medical waste is defined as [10]:

- Liquid or semi-liquid blood or OPIM
- Contaminated items that would release blood or OPIM in a liquid or semi-liquid state if compressed
- Items that are caked with dried blood or OPIM capable of releasing these materials during handling
- Contaminated sharps (e.g., needles, burs, scalpel blades, endodontic files)
- Pathologic and microbiologic wastes containing blood or OPIM

Regulated medical waste accounts for only 9% to 15% of total waste in hospitals and 1% to 2% of total waste in dental offices [10]. Examples of regulated waste found in dental practice settings are solid waste soaked or saturated with blood or saliva (e.g., gauze saturated with blood after surgery), extracted teeth, surgically removed hard and soft tissues, and contaminated sharp items, such as needles, scalpel blades, and wires [10]. General medical waste, including used gloves, masks, gowns, and lightly soiled gauze or cotton rolls, may be disposed of with ordinary waste.

Regulated medical waste requires careful disposal and containment before collection and consolidation for treatment. A single, leak-resistant biohazard bag is usually adequate for containment of regulated medical wastes, provided the bag is sturdy and the waste can be discarded without contaminating the bag's exterior. Contamination or puncturing of the bag requires placement into a second biohazard bag. All bags should be securely closed for disposal.

Medical waste requiring storage should be kept in labeled, leak-proof, puncture-resistant containers under conditions that minimize or prevent foul odors. The storage area should be well-ventilated and inaccessible to pests. Any facility that generates regulated medical waste should have a regulated medical waste management plan to ensure health and environmental safety in accordance with federal, state, and local regulations [10; 21].

TRANSMISSION-BASED PRECAUTIONS

As discussed, Transmission-Based Precautions are used in addition to Standard Precautions for patients that require additional precautions to prevent infection transmission. The three categories of Transmission-Based Precautions are Contact, Droplet, and Airborne Precautions; these categories may overlap, and more than one category may be used at a time [25].

CONTACT PRECAUTIONS

Contact Precautions are utilized for patients with known or suspected infections that represent an increased risk for contact transmission. Contact Precautions require that practitioners [24]:

- Ensure appropriate patient placement to lessen risk for other patients or employees.
- Use PPE appropriately, including gloves and a gown. Donning PPE upon room entry and properly discarding before exiting the patient room is recommended to contain pathogens.
- Use disposable or dedicated patient-care equipment such as blood pressure cuffs. If common equipment must be used for multiple patients, thoroughly clean and disinfect.
- Prioritize cleaning and disinfection of patient rooms and contact surfaces, focusing on frequently touched surfaces and equipment and objects in the immediate vicinity of the patient.

DROPLET PRECAUTIONS

Use Droplet Precautions for patients that are known or suspected to be infected with pathogens transmitted by respiratory droplets. Droplet Precautions requires that one [24]:

- Source control by putting a mask on the patient to prevent respiratory droplets from spreading.
- Ensure appropriate patient placement to lessen risk for other patients or employees.
- Use PPE appropriately, including gloves and a gown. Donning PPE upon rom entry and properly discarding before exiting the patient room is recommended to contain pathogens.

- Limit transport and movement of patients outside of the room, and if movement is necessary, instruct patient to wear a mask and follow Respiratory Hygiene/Cough Etiquette.

AIRBORNE PRECAUTIONS

Airborne Precautions are used when patients are known or suspected to be infected with pathogens transmitted by airborne or aerosol route. Airborne pathogens include TB, measles, chickenpox, and herpes zoster. Airborne Precautions require [24]:

- Source control by putting a mask on the patient to prevent respiratory droplets from spreading.
- Ensure appropriate patient placement in an airborne infection isolation room (AIIR) constructed according to the CDC's Guideline for Isolation Precautions. In settings where Airborne Precautions cannot be implemented due to limited engineering resources, masking the patient and placing the patient in a private room with the door closed will reduce the likelihood of airborne transmission until the patient is either transferred to a facility with an AIIR or returned home.
- Restrict susceptible healthcare personnel from entering the room of patients known or suspected to have measles, chickenpox, disseminated zoster, or smallpox if other immune healthcare personnel are available.
- Use PPE appropriately, including a fit-tested NIOSH-approved N95 or higher level respirator for healthcare personnel.
- Limit transport and movement of patients outside of the room, and if movement is necessary, instruct patient to wear a surgical mask and observe Respiratory Hygiene/Cough Etiquette. Healthcare personnel transporting patients who are on Airborne Precautions do not need to wear a mask or respirator during transport if the patient is wearing a mask and infectious skin lesions are covered.
- Immunize susceptible persons as soon as possible following unprotected contact with vaccine-preventable infections (e.g., measles, varicella or smallpox).

PROTECTING DENTAL HEALTHCARE WORKERS

Protecting DHCP is an integral part of every dental organization's general program for infection prevention and control. The objectives usually include [5]:

- Educating personnel about the principles of infection control and emphasizing individual responsibility
- Providing care to personnel for work-related illnesses or exposures
- Identifying work-related infection risks and implementing appropriate preventive measures
- Containing costs by preventing infectious diseases that result in absenteeism and disability

OCCUPATIONAL EXPOSURES

An occupational exposure is defined as a percutaneous injury or contact of mucous membrane or nonintact skin with blood, tissue, or OPIM, most commonly a needlestick injury. The risk of infection depends on several factors, including [27]:

- Whether the exposure was from a hollow-bore needle or other sharp instrument
- Whether the exposure was to non-intact skin or mucous membranes
- The amount of blood involved
- The amount of contagion present in the source person's blood

If a sharps injury occurs, wash the exposed area with soap and water. Do not "milk" or squeeze the wound. There is no evidence that using antiseptics will reduce the risk of transmission for any bloodborne pathogens; however, the use of antiseptics is not contraindicated. In the event that the wound needs suturing, emergency treatment should be obtained. The risk of contracting HIV from this type of exposure is extremely rare. There are no documented cases of a dental healthcare professional contracting HIV from an occupational exposure.

OSHA requires dental employers of an individual with an occupational exposure to a bloodborne pathogen to arrange a confidential medical evaluation and follow-up for any employee reporting an exposure incident [3]. An exposure incident is any eye, mouth, mucous membrane, nonintact skin, or other parenteral contact with blood or OPIM. Saliva in dental procedures is treated as potentially infectious material.

Following an exposure, the dental employer must refer the exposed employee to a licensed healthcare professional who can provide information and counseling and discuss how to prevent further spread of a potential infection. The exposed employee is entitled to appropriate follow-up and evaluation of any reported illness to determine if the symptoms may be related to HIV or hepatitis B or C infection [27].

Prompt response is necessary whenever an occupational exposure occurs. If possible, the patient should be interviewed to determine if any risk factors or bloodborne pathogens not previously disclosed are present. The patient may be tested along with the employee, if he or she agrees, in order to obtain the most information possible. Testing and postexposure prophylaxis may be conducted at an occupational injury clinic. All events leading up to and after the exposure should be documented in a written report [27].

Postexposure Prophylaxis

Postexposure prophylaxis (PEP) involves the provision of medications to someone who has had a substantial exposure, usually to blood, in order to reduce the likelihood of infection. PEP is available for HIV and hepatitis B virus. Although there is no PEP recommended for hepatitis C virus, limited data indicate that antiviral therapy might be beneficial when started early in the course of infection [28]. For employees who have not received the hepatitis B vaccine series, the vaccine (and in some circumstances hepatitis B immunoglobulin) should be offered as soon as possible (within seven days) after the exposure incident. The effectiveness of hepatitis B immunoglobulin administered more than seven days after exposure is unknown. PEP has been the standard of care for healthcare providers with substantial occupational exposures since 1996 and must be provided in accordance with the recommendations of the U.S. Public Health Service [28].

TUBERCULOSIS PREVENTION

California has one of the highest incidence rates of TB in the country, primarily because of its large population of persons born outside of the United States [31]. In 2023, the TB infection rate in California was 13 times higher among non-U.S.-born individuals than among those born in the United States. The rates of TB among Asian and Black individuals born outside the United States were 43 and 28 times higher, respectively, than that of U.S.-born White persons [31].

To prevent the transmission of *Mycobacterium tuberculosis* in dental care settings, infection-control policies should be developed based on the community TB risk assessment and reviewed annually. The policies should include appropriate screening for latent or active TB disease in dental care providers, education about the risk for TB transmission, and provisions for detection and management of patients who have suspected or confirmed TB disease.

The CDC recommends that all dental care providers be screened for TB upon hire, using either a tuberculin skin test or blood test [10]. The California Department of Public Health recommends an initial skin or blood test; positive reactions or results should be followed up by chest x-ray. Annual testing thereafter is recommended for dental personnel, although local and/or employer policies and methods of testing (e.g., questionnaire or skin or blood test) may differ [32].

Patients with symptoms of TB should be identified by screening; dental treatment should be deferred until active TB has been ruled out or the patient is no longer infectious following treatment. The potentially active TB patient should be promptly referred to an appropriate medical setting for evaluation of possible infectiousness and should be kept in the dental care setting only long enough to arrange for referral. Standard Precautions are not sufficient to prevent transmission of active TB [24].

A diagnosis of active respiratory TB should be considered for any patient with the following symptoms:

- Coughing for more than three weeks
- Loss of appetite
- Unexplained weight loss
- Night sweats
- Bloody sputum or hemoptysis
- Hoarseness
- Fever
- Fatigue
- Chest pain

A person with latent TB (positive skin test and no symptoms) can be treated in a dental office using standard infection control precautions [26]. This person has no symptoms and cannot transmit TB to others as there are no spores in his or her sputum.

The American Dental Association recommends that all patients be asked about any history of TB or exposure to TB, including signs and symptoms and medical conditions that increase their risk for TB disease. The Health History Form, developed by the U.S. Department of Health and Human Services, can be used to ask these questions.

If a patient with suspected or confirmed infectious TB disease requires urgent dental care, that care should be provided in a setting that meets the requirements for California ATD standards and airborne infection isolation. Respiratory protection (with a fitted N95 disposable respirator) should be used while performing procedures on such patients. Standard surgical masks are not designed to protect against TB transmission [4; 26].

VACCINATION

Due to increased risk of occupational exposure, the CDC strongly recommends that all healthcare workers, including dental care providers, receive immunizations as a preventive measure. While these are the recommendations from the CDC, state and local legislation and workplace regulations may or may not require these immunizations.

Hepatitis B

Cal/OSHA guidelines require that healthcare workers who perform tasks that may involve exposure to blood or bodily fluids must have hepatitis B vaccination made available to them within 10 working days of initial assignment. The employee must also be given free information about the efficacy, safety, and benefits of vaccination [30].

The hepatitis B vaccine is given in a series of three injections at 0, 1, and 6 months. If one of the injections is missed, the series does not need to be restarted. The CDC recommends if the series is interrupted, the second or third dose should be administered as soon as possible; the second and third doses should be separated by an interval of at least eight weeks [24].

No booster is necessary. Follow-up serologic testing two months after vaccination (to ensure efficacy) is recommended. The provision of employer-supplied hepatitis B vaccination may be delayed until after probable exposure for employees whose sole exposure risk is the provision of first aid.

The high risk of hepatitis B virus exposure among healthcare personnel makes it imperative that clinical dental personnel be vaccinated. Vaccination can protect both workers and patients from hepatitis B virus infection and, whenever possible, should be completed when dentists or other dental care personnel are in training [10].

Influenza

Influenza is primarily transmitted from person to person via large, virus-laden droplets generated when infected persons cough or sneeze. These large droplets can settle on the mucosal surfaces of the upper respiratory tracts of susceptible persons who are within 3 feet of infected persons. Transmission may also occur through direct contact or indirect contact with respiratory secretions, such as when touching surfaces contaminated with influenza virus and then touching the eyes, nose, or mouth. The CDC strongly recommends that all healthcare personnel, especially those who have contact with patients at high risk, who have high-risk medical conditions, or who are older than 50 years of age, receive an annual (seasonal) influenza vaccination [24].

Measles, Mumps, and Rubella (MMR)

Vaccination for measles, mumps, and rubella is typically given in a single combination vaccine. The CDC notes that, regardless of birth year, individuals should receive two doses of measles, two doses of mumps, and one dose of rubella live-virus vaccine to be considered protected. MMR is given in a series of two injections, at least 28 days apart. Because the vaccine is often combination, most individuals will receive two doses of rubella-containing vaccine, with no adverse effect [24].

Tetanus and Diphtheria (Toxoids) and Acellular Pertussis (Tdap)

Vaccination for tetanus is recommended for all DHCP, regardless of age. The CDC recommends receiving the vaccine as soon as feasible if Tdap has not already been received, and regardless of interval from the last tetanus and diphtheria (Td) immunization. Routine boosters are recommended every 10 years thereafter [24].

Varicella

The varicella-zoster virus is responsible for chickenpox and shingles. The CDC recommends the varicella-zoster vaccine for all DHCP who do not have evidence of immunity, defined as: written documentation of two doses of varicella vaccine; laboratory evidence of immunity or confirmation of disease; diagnosis or verification of acute disease by a health-care provider; or diagnosis or verification of herpes zoster by a health-care provider. While the varicella vaccine is recommended, the CDC does note that serologic testing before vaccination is likely to be cost-effective, as 71% to 93% of adults without a history of varicella are immune [24]. Immunization is considered complete after a series of two doses, spaced four to eight weeks apart [24].

TRAINING AND EDUCATION

Dental personnel should also fulfill all federal and state requirements for infection control training. New employees, or employees being transferred into jobs involving tasks or activities with potential exposure to blood or OPIM, must receive bloodborne pathogen training before assignment to tasks in which an occupational exposure may occur. Retraining is required annually or when changes in procedures or tasks affecting occupational exposure occur. Employees should be provided access to a qualified trainer to answer questions during the training session [9; 10].

CONCLUSION

Effective infection control techniques are critical to reducing the incidence of infections in dental facilities. Antiseptic techniques and antibiotics will kill micro-organisms, while proper hand hygiene will block their transmission. Gloves, gowns, and masks remove DHCP from the transmission cycle by protecting them from contact with micro-organisms. Transmission-Based Precautions and isolation techniques help patients avoid being vectors of transmission. Engineering controls help to make the workplace safer, while administrative controls ensure that written protocols are in place and followed. Lastly, ensuring that all DHCP are immune or vaccinated can help decrease the availability of potential hosts.

DENTAL BOARD OF CALIFORNIA GENERAL PROVISIONS: SECTION 1005. MINIMUM STANDARDS FOR INFECTION CONTROL

The Dental Board of California General Provisions: Section 1005. Minimum Standards for Infection Control is available online at https://govt.westlaw.com/calregs/Document/IDB85BD734C8111EC89E5000D3A7C4BC3.

Be sure to transfer your answers to the Answer Sheet located on the envelope insert located between pages 36–37.
DO NOT send these test pages to NetCE. Retain them for your records.
PLEASE NOTE: Your postmark or facsimile date will be used as your test completion date.

COURSE TEST - #58584 INFECTION CONTROL FOR DENTAL PROFESSIONALS: THE CALIFORNIA REQUIREMENT

This is an open book test. Please record your responses on the Answer Sheet.
A passing grade of at least 70% must be achieved in order to receive credit for this course.

This 2 CE Credit Hour activity must be completed by January 31, 2028.

Accreditations & Approvals: *NetCE is an ADA CERP Recognized Provider.*

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Designations of Credit: *NetCE designates this activity for 2 continuing education credits.*

AGD Subject Code: 148.

This course meets the Dental Board of California's requirements for 2 units of continuing education. Dental Board of California course #02-3841-00452.

1. **The California Division of Occupational Safety and Health (Cal/OSHA) adopted the nation's first aerosol transmissible disease (ATD) standard in**
   A) *1981.*
   B) *1991.*
   C) *2003.*
   D) *2009.*

2. **California dental offices must comply with the ATD standard if they**
   A) *do not treat patients with identified ATD cases.*
   B) *treat patients with suspected or confirmed illnesses that require Airborne or Droplet Precautions.*
   C) *refrain from performing aerosol-generating dental procedures on patients identified as a possible ATD transmission risk.*
   D) *All of the above*

3. **The average risk for infection after a needlestick or cut exposure to hepatitis C virus-infected blood is approximately**
   A) *0.3%.*
   B) *1.8%.*
   C) *3%.*
   D) *18%.*

4. **Of the following, which generally poses the greatest risk for airborne infection?**
   A) *Splatter*
   B) *Droplets*
   C) *Aerosols*
   D) *Unwashed hands*

5. **Standard Precautions apply to contact with all of the following, EXCEPT:**
   A) *Blood*
   B) *Sweat*
   C) *Intact skin*
   D) *Mucous membranes*

6. **The OSHA Bloodborne Pathogens Standard mandates the wearing of masks, eye protection, and face shields**
   A) *without removal all day for all patients.*
   B) *only for invasive procedures, such as surgery.*
   C) *for all forms of patient contact, regardless of risk.*
   D) *when blood or other potentially infectious material exposures are likely.*

7. **Studies have shown that which of the following types of gloves have the highest failure rates?**
   A) *Vinyl*
   B) *Latex*
   C) *Nitrile*
   D) *Surgical gloves*

8. **Devices connected to the dental water system that enter the patient's mouth should be flushed for how long after each patient?**
   A) *No more than 15 seconds*
   B) *At least 20 seconds*
   C) *At least 90 seconds*
   D) *Exactly 2 minutes*

9. **Which of the following is NOT a regulated waste found in dental practice settings?**
   A) *Extracted teeth*
   B) *Contaminated sharp items*
   C) *Gauze saturated with blood*
   D) *Disposable gloves, masks, and gowns*

10. **Postexposure prophylaxis, or the provision of medications after a substantial exposure in order to reduce the likelihood of infection, is available for**
    A) *HIV.*
    B) *hepatitis B.*
    C) *hepatitis C.*
    D) *Both A and B*

Dental Treatment of Patients with Mental Disorders

Audience
This course is designed for all dental professionals in all practice settings.

Course Objective
In dentistry, mental health disorders are commonly encountered in patients and can impact oral health and the level of care that can be provided. The purpose of this course is to provide dental professionals with the information necessary to identify mental health disorders and to address these issues appropriately.

Learning Objectives
Upon completion of this course, you should be able to:

1. Describe the most frequently diagnosed mood disorders and potential impact on oral health.
2. Identify anxiety disorders and considerations for anxiety during dental treatment.
3. Discuss the presentation of post-traumatic stress disorder (PTSD) and impact on dental care.
4. Review considerations for dental patients with schizophrenia.
5. Analyze necessary modifications to dental treatment to accommodate the needs of patients with somatoform disorders.
6. Describe alterations in oral health that may arise from substance use disorders or medications used in their treatment.

Faculty
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Faculty Disclosure
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INTRODUCTION

Providing optimum treatment to dental patients requires a comprehensive understanding of the entire spectrum of their medical history. Systemic illnesses, including mental illnesses, can have a direct impact on oral health or an indirect impact via medications used in treatment. While awareness and general acceptance of mental health issues have improved in recent decades, current mental health issues coupled with historical stigma may prevent many patients from seeking treatment, thus leading to poorer dental and overall health, and a reduced quality of life.

Mental disorders are diagnosed or systemic conditions that can alter thought, mood, or behavior (individually or collectively) and that cause distress and impair function. It is estimated that nearly 25% of adults in the United States are currently experiencing a mental illness and that 50% of adults in the United States will experience at least one mental illness during their lifetime [1]. This represents a large portion of the U.S. population, many of whom will seek dental care.

This course will serve as an introduction to common mental illnesses in the United States, including a description of the most prevalent symptoms of each. Further, potentially adverse oral and dental effects of mental disorders and/or treatments will be explored. A review of dental treatment modifications that may be required will be provided. Although this course focuses on a selected group of mental disorders, it should provide insight into the varying needs of patients and the necessity for considering mental health in all dental patients.

MOOD DISORDERS

BIPOLAR DISORDER

Bipolar disorder, also known as manic depressive disorder, is a mood disorder that affects approximately 2.8% of the adult population, without a statistically significant difference of occurrence between men and women [3]. Bipolar disorder I features alternation of major depressive episodes with full manic episodes; bipolar disorder II is characterized by major depressive episodes and manic episodes that are less severe than those seen in bipolar I disorder [4]. A manic episode is defined in the revised fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5-TR) with the following criteria [5]:

- A distinct period of abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy, lasting at least one week and present most of the day, nearly every day (or any duration if hospitalization is necessary)
- During the period of mood disturbance and increased energy or activity, three (or more) of the following symptoms have persisted (four if the mood is only irritable) and have been present to a significant degree and represent a noticeable change from usual behavior:
  - Inflated self-esteem or grandiosity
  - Decreased need for sleep
  - More talkative than usual or pressure to keep talking (pressured speech)
  - Flight of ideas or subjective experience that thoughts are racing
  - Increase in goal-directed activity or psychomotor agitation
  - Excessive involvement in pleasurable or hedonistic activities with a high potential for painful consequences
- The mood disturbance is sufficiently severe to cause marked impairment in social or occupational functioning or to necessitate hospitalization to prevent harm to self or others, or there are psychotic features
- The episode is not attributable to the physiologic effects of a substance (e.g., an illicit drug, a medication, other treatment) or to another medical condition

At least one lifetime manic episode is required for the diagnosis of bipolar I disorder [5]. The elation and euphoria of this phase can be of such a magnitude that the patient may feel that he/she is cured of bipolar disorder and may discontinue the use of their medication(s).

Common characteristics of the depressive phase include lethargy, prolonged sadness, decreased self-esteem, contemplation of death or suicide, problems with concentration and memory, insomnia, loss of interest in activities that were previously enjoyable, and loss of appetite [7].

The duration of time in between episodes and the actual time in a manic or depressive phase varies considerably among patients. Some patients cycle between mania and depression several times during the course of a day or a week, while other patients may experience bipolar episodes only a few times each year. Other patients may remain in either the manic or the depressive phase for weeks or months at a time. Patients who experience bipolar episodes at least four times per year are known as "rapid cyclers." These patients are more resistant to conventional medical treatment [7].

The initial diagnosis of bipolar disorder is usually made during adolescence or early adulthood, when the patient exhibits a first manic episode. This may precede a depressive episode.

The underlying etiology of bipolar disorder is not completely understood. A genetic predisposition is hypothesized to play a role, as studies with monozygotic (identical) twins yield concordance rates of 60% to 80% while the rates decline to 14% to 23% for dizygotic (fraternal) twins [8]. Other researchers have suggested that problems with mitochondrial energy production may contribute to the development of the disorder [9].

Medical Treatment

There is no current cure for bipolar disorder, and long-term treatment is designed to allow for better control of manic/depressive swings. Treatment plans generally consist of pharmacotherapy, psychotherapy, and lifestyle modification that can be encouraged with family and peer support.

Mood stabilizers have long been the first choice for the pharmacologic management of bipolar disorder. Among these medications, lithium is most frequently prescribed. This agent helps to prevent manic episodes and to decrease the risk of suicidal behavior [13]. However, it is not always effective and its side effects can preclude its use.

The long-term use of lithium can cause adverse cardiovascular, central nervous, endocrine, hematologic, and neuromuscular effects [13]. In oral health, perhaps the most significant adverse effect of long-term lithium use is xerostomia (dry mouth). Interventions for xerostomia (dry mouth) include artificial saliva substitutes, frequent sips of water, or cholinergic medications, such as pilocarpine. Immunoglobulins and other compounds present in saliva that support immune functions will have a decreased output and can subject patients to recurring opportunistic infections, such as oral candidiasis. Impaired salivary flow will also cause a decrease in saliva's cleansing action upon the teeth. Further, the ability of salivary components to maintain the pH of saliva as a mild base is altered, which causes the oral environment to become more acidic.

The use of nonsteroidal anti-inflammatory drugs (NSAIDs) such ibuprofen and naproxen to manage dental or oral pain is common, but these medications can decrease the renal clearance of lithium and increase its serum concentration to toxic levels. As such, concurrent use of NSAIDs and lithium should be avoided in favor of acetaminophen-based analgesics, if appropriate. Patients taking lithium should also be cautioned to avoid over-the-counter NSAIDs [13].

The antibiotic metronidazole is occasionally used as a single agent or in conjunction with beta-lactam antibiotics (e.g., amoxicillin) to treat odontogenic infections. Metronidazole can also decrease the renal clearance of lithium and cause subsequent elevation in its plasma concentration, increasing the risk for lithium toxicity. As such, an antibiotic that is compatible with the patient's medical history should be used instead [13].

If lithium is ineffective or causes unacceptable side effects, valproic acid or carbamazepine may be used as a second-line option for patients with bipolar disorder. Valproic acid can potentiate central nervous system (CNS) depression seen with opioid analgesics and benzodiazepines (e.g., diazepam). Carbamazepine can decrease plasma concentrations of acetaminophen and tramadol and decrease their analgesic efficacy [14].

Macrolide antibiotics (e.g., erythromycin, azithromycin, clarithromycin) can increase the plasma concentration of valproic acid and carbamazepine, which can lead to systemic toxicity [13]. Alternative effective antibiotics should be used. Any other prescribed or over-the-counter medications that are used by the patient should be evaluated for potential adverse drug interactions with those used adjunctive to dental treatment.

Dental Treatment Modifications

As with any patient, dental treatment of a patient with bipolar disorder begins with a thorough review of the patient's current state and medical history. Patients experiencing a manic episode may display signs of hyperactivity, including grinding of teeth and excessive frequency and application of force during tooth brushing, which can lead to cervical abrasion and trauma to the gingival tissues. The subsequent sensitivity from the exposed dentin can discourage the patient from proper oral hygiene practices and increase the risk of caries and periodontal disease. Dental staff should provide the patient with a mirror view of any area of cervical abrasion and provide individualized oral hygiene instructions to maintain optimal oral hygiene without perpetuating the cycle of abrasion.

Patients experiencing a depressive episode may disregard oral hygiene. If this phase is extensive and oral hygiene is neglected for an extended period, caries and periodontal disease may develop or worsen. Patients with partial or complete dentures may neglect daily maintenance, with a consequent accumulation of food debris and micro-organisms that can cause inflammation of the underlying tissues and preclude the ability to wear the prostheses.

If possible, dental appointments should be scheduled between bipolar episodes, as patients who are in a manic or depressive phase may have difficulty enduring dental appointments or comprehending complex treatment plans, financial arrangements, and/or issues related to informed consent. The patient's physician should be contacted before initiation of treatment if there is any concern about the patient's ability to endure the proposed dental treatment plan.

MAJOR DEPRESSIVE DISORDER

Depressive disorders afflict approximately 17.3 million Americans each year [16]. MDD affects approximately 21 million American adults, or about 8% of the U.S. population 18 years of age and older in a given year. The lifetime incidence of depression in the United States is approximately 24% in women and 13% in men, or nearly 20% of all Americans. Depression is more common in persons with medical illnesses, with 11% to 36% of general medical inpatients fulfilling diagnostic criteria for MDD [17]. The DSM-5-TR umbrella of depressive disorders includes MDD (including major depressive episode), persistent depressive disorder, premenstrual dysphoric disorder, substance/medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder, unspecified depressive disorder, and disruptive mood dysregulation disorder, a new diagnosis added to address concerns about the potential overdiagnosis of and treatment for bipolar disorder in children up to 12 years of age [5]. Of these types, MDD is the most common type.

To meet the diagnosis of MDD, a person must have at least five of the following symptoms for at least two weeks' duration and represent a change from previous functioning. At least one of the symptoms must be either depressed mood or loss of interest or pleasure [5]:

- Depressed mood most of the day, nearly every day
- Markedly diminished interest or pleasure in all or almost all activities most of the day or nearly every day
- Significant weight loss or gain (>5% body weight) or increase or decrease in appetite
- Insomnia/hypersomnia nearly every day
- Psychomotor agitation or retardation nearly every day
- Fatigue/loss of energy nearly every day
- Feelings of worthlessness or inappropriate guilt nearly every day
- Diminished concentration or indecisiveness nearly every day
- Recurrent thoughts of death or suicide, suicide attempt, or a specific plan for committing suicide

In addition, MDD diagnosis requires that the symptoms must not meet the criteria for a mixed episode and there is no previous experience of a manic, mixed, or hypomanic episode. Symptoms of MDD cause clinically significant distress or impairment in social, occupational, or other important areas of functioning. Additionally, the symptoms may not be due to the direct physiologic effects of a recreational or prescribed drug or be better accounted for by bereavement (i.e., after the loss of a loved one, the symptoms persist for longer than two months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation) [5].

The diagnostic symptoms of MDD represent the domains of affective, behavioral, cognitive, and somatic impairment. Affective or mood symptoms include depressed mood and feelings of worthlessness or guilt, while behavioral symptoms include social withdrawal and agitation. Cognitive symptoms include difficulties with concentration or decision making, and somatic or physical symptoms include insomnia or fatigue.

The DSM-5-TR diagnostic criteria for MDD also include several specifiers to further describe the nature of the current episode of MDD. These specifiers include [5]:

- Anxious distress
- Mixed features
- Melancholic features
- Atypical features
- Mood-congruent psychotic features
- Mood-incongruent psychotic features
- Catatonic features
- Peripartum onset
- Seasonal pattern

Pharmacotherapy

Selective Serotonin Reuptake Inhibitors

Selective serotonin reuptake inhibitors (SSRIs) have advantages of low overdose lethality and better tolerability than first-generation antidepressants, which can improve adherence. SSRIs are particularly effective in patients with obsessive-compulsive symptoms, but may initially worsen anxiety or panic symptoms [22; 23]. This class includes the agents fluoxetine (Prozac), paroxetine (Paxil), sertraline (Zoloft), fluvoxamine (Luvox), citalopram (Celexa), escitalopram (Lexapro), and vortioxetine (Brintellix). Citalopram may have fewer drug-drug interactions than other SSRIs, and fluoxetine may be a better choice in patients with poorer adherence due to its long half-life [22; 23].

The most common side effects with SSRIs are gastrointestinal (nausea, vomiting, and diarrhea), activation/insomnia (restlessness, agitation, anxiety, akathisia, and sleep disturbances), sexual, headache, fatigue, and weight gain [22; 23]. Xerostomia can also occur with the use of SSRIs. Many of these side effects dissipate over time.

Platelet aggregation can be impaired due to platelet serotonin depletion, which can interfere with the ability to achieve hemostasis during oral or periodontal surgery or root planing and curettage procedures. The concurrent use of NSAIDs or daily aspirin as a cardioprotective measure can exacerbate this problem and should be avoided, particularly if invasive dental procedures are planned. SSRI-induced bruxism (the involuntary grinding or clenching of the teeth) has been reported [13]. For patients prescribed SSRIs who have dental phobia or anxiety, anxiolytic medications should only be given following consultation with the patient's physician, as this combination can potentiate CNS depression and increase the risk for respiratory arrest.

If an SSRI or tricyclic antidepressant (TCA) is combined with tramadol (an analgesic used for moderate-to-severe pain), serotonin syndrome may develop. Mild cases of serotonin syndrome present with signs and symptoms such as anxiety, diaphoresis, and gastrointestinal complaints. Severe cases can present with confusion, hypertension, hyperthermia, hyper-reflexia, and seizures [24]. The serotonin toxidrome has a variable presentation and can be difficult to detect. The most distinguishing features are clonus, fever, and hyperreflexia, but the most important diagnostic clue is a history of exposure to serotonergic drugs. Given the potentially serious and even deadly effects of combining these medications, tramadol should be avoided and another analgesic chosen for these patients.

SSRIs have also been associated with alteration in taste (dysgeusia), sialadenitis (inflammation of the salivary glands), stomatitis (inflammation of the mucosal lining of any of the structures of the mouth), and edema of the tongue. Patients who experience dysgeusia may use extra salt or sugar to compensate for the decreased ability to taste. These compensatory mechanisms are contrary to good general and oral health. The pain associated with stomatitis can discourage patients from maintaining optimal oral hygiene [13; 25].

While these adverse oral effects will resolve upon cessation of SSRI use, halting the medication suddenly is dangerous. Titration or switching to another class of antidepressant should only be attempted by the patient's physician.

Serotonin-Norepinephrine Reuptake Inhibitors

Most serotonin-norepinephrine reuptake inhibitors (SNRIs), including venlafaxine (Effexor), desvenlafaxine (Pristiq), levomilnacipran (Fetzima), and duloxetine (Cymbalta), are several-fold more selective for serotonin than norepinephrine. Safety, tolerability, and side effect profiles of SNRIs resemble SSRIs, with the exception that the SNRIs have been associated (rarely) with sustained elevated blood pressure [22; 23]. As such, patients taking SNRIs are at risk for xerostomia, bruxism, and drug-drug interactions.

Tricyclic Antidepressants

TCAs are predominantly serotonin and/or norepinephrine reuptake inhibitors that act by blocking the serotonin transporter and the norepinephrine transporter, respectively, which results in an elevation of the extracellular concentrations of these neurotransmitters, and therefore an enhancement of neurotransmission. TCAs also have varying but typically high affinity for the H1 and H2 histamine receptors and muscarinic acetylcholine receptors. As a result, they also act as potent antihistamines and anticholinergics. These properties are generally undesirable in antidepressants, however, and likely contribute to their large side effect profiles [13; 25].

TCAs are comparable in efficacy to SSRIs/SNRIs, but their side effect profile makes them seldom used as first-line therapy [22; 23]. TCAs may initially worsen anxiety or panic symptoms. Due to side effect potential of cardiac arrhythmia, TCAs should be used very cautiously, if at all, in patients with heart problems. Issues with orthostatic hypotension and sedation, particularly in elderly patients, also arise and may be a concern following dental appointments.

Anticholinergic and antihistamine activity accounts for many side effects, including xerostomia, blurred vision, reduced gastrointestinal motility or constipation, urinary retention, cognitive and/or memory impairment, and increased body temperature [22; 23]. Other side effects may include drowsiness, anxiety, emotional blunting (apathy/anhedonia), confusion, restlessness, dizziness, akathisia, hypotension, tachycardia, and arrhythmia. As with SSRIs, patients taking TCAs may develop dysgeusia, sialadenitis, stomatitis, and lingual edema. Tolerance to side effects often occurs if treatment is continued. Side effects may also be less troublesome if treatment is initiated with low doses and gradually increased [13; 25].

The prolonged use of TCAs can cause suppression of the production of the formed elements of human blood, and this decreased production of platelets can result in coagulation problems after invasive dental procedures [14]. Similarly, decreased production of granular and agranular leukocytes can lead to an increased potential for opportunistic oral infections and delayed healing of intraoral surgical sites. A complete blood count (CBC) with differential and adjunctive laboratory tests (e.g., prothrombin time [PT], partial thromboplastin time [PTT]) are advisable prior to any dental procedure in which the ability to achieve hemostasis is required.

TCAs may also accentuate the effects of vasoconstrictors in local anesthetic solutions (e.g., epinephrine, levonordefrin), which can culminate in a rare but serious hypertensive crisis. This potential adverse effect is more pronounced when a TCA is combined with levonordefrin [28]. If appropriate, a local anesthetic solution without a vasoconstrictor (e.g., mepivacaine, 3% prilocaine) should be used for these patients, keeping in mind that the duration and depth of anesthesia will be reduced. If a local anesthetic with a vasoconstrictor is used in a patient also taking a TCA, a cautious and conservative approach is mandatory.

Suicide

The rate of suicide is significantly higher among persons with a mood disorder than the general population. One long-term study found that 12% to 20% of individuals diagnosed with a major mood disorder (including schizophrenia, anxiety, depression, dementia, and/or substance abuse), ultimately died by suicide. The first three months after diagnosis is the period of highest risk for a first attempt, with the three months following the first attempt being the highest risk period for a second attempt [26].

Most people who are suicidal exhibit warning signs, whether or not they are in an acute suicide crisis. These warning signs should be taken seriously and include observable signs of serious depression; withdrawal from friends and/or social activities; sleep problems; and loss of interest in personal appearance, hobbies, work, and/or school [27]. Although dental professionals may feel uncomfortable with suicidal patients, it is essential not to ignore or deny the suspicion of suicide risk. The first and most immediate step is to allocate adequate time to the patient, even though many others may be scheduled, in order to show empathy and build rapport. Patients at risk for suicide should be referred to a behavioral health provider and provided the National Suicide and Crisis Lifeline phone number, 988. If suicide is an imminent risk, contacting emergency medical services may be warranted.

Dental Treatment Modifications

As discussed, the oral health of patients with major depressive disorder can be compromised by the direct and indirect effects of the medications that are used in its treatment and by the manner in which this disorder affects the patient's motivation to maintain optimal oral hygiene and attend periodic dental recall appointments. However, there are no universal modifications that apply to the dental treatment for these patients. Motivation of the patient to maintain optimal oral hygiene at home and to continue attendance at periodic recall appointments is a challenge, although this is an issue for many patients without depression as well. The length of a dental appointment should reflect the patient's ability to withstand dental treatment. Longer appointments and more complex dental procedures should only be scheduled if necessary. If there is any doubt about the degree to which major depressive disorder affects a patient's ability to commit to a treatment plan, withstand dental treatment, or tolerate medications, consultation with the patient's physician or psychiatrist is recommended.

ANXIETY DISORDERS

Anxiety disorders are characterized by states of chronic, excessive dread or fear of everyday situations. The fear and avoidance can be life-impairing and disabling. Anxiety disorders result from the interaction of biopsychosocial factors, whereby genetic vulnerability interacts with situations, stress, or trauma to produce clinically significant syndromes. The influence of hereditary factors and adverse psychosocial experiences on pathogenesis and pathophysiology is complex, but neuroscience advances have greatly improved the understanding of the underlying factors in the development and maintenance of anxiety disorders. Each year in the United States, anxiety disorders impact approximately 40 million adults (19.1% of total population) [29].

While there are many disorders under the umbrella of anxiety disorders, the conditions with the most impact on dental care are generalized anxiety, panic disorder, and specific phobia.

GENERALIZED ANXIETY DISORDER

The National Health Interview Study found that the annual incidence of generalized anxiety disorder was approximately 15% in adults in the United States in 2019; moderate-to-severe symptoms occurred in approximately 6% of individuals [30]. The majority of persons with generalized anxiety disorder diagnoses were female (19.5% compared with 11.2% in men). Childhood or adolescent onset was found in more than 50% of those seeking help for anxiety, reflecting the chronicity of the disease [5; 30].

Generalized anxiety disorder is characterized by excessive and inappropriate worrying that is persistent and not restricted to particular circumstances. Patients have physical anxiety symptoms and key psychologic symptoms. Generalized anxiety disorder is often comorbid with major depressive disorder, panic disorder, phobia, health anxiety, and obsessive-compulsive disorder [31]. The diagnostic criteria for generalized anxiety disorder are [5]:

- Excessive anxiety and worry (apprehensive expectation) over a number of everyday concerns (e.g., school/work performance)
- Individual finds it difficult to control the worry
- Excessive anxiety and worry are associated with three or more of the following six symptoms, with at least some occurring more days than not for at least six months:
  - Restlessness, feeling "on edge"
  - Easily fatigued
  - Difficulty concentrating
  - Irritability
  - Muscle tension
  - Sleep disturbance (difficulty falling or staying asleep, restless sleep)
- The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning
- Symptoms not better explained by another mental disorder
- The disturbance is not attributable to the physiologic effects of a substance or another medical condition

Medical Treatment

The primary goals of generalized anxiety disorder treatment are reduction of anxiety symptoms and reduction or elimination of disability. Pharmacotherapy and CBT or cognitive therapy are equal as first-line options.

The Anxiety Disorders Association of Canada and the Anxiety and Depression Association of America have created guidelines for the selection of appropriate pharmacotherapy in the treatment of generalized anxiety disorder with differing recommendations regarding first- and second-line medications [33; 34]. The Anxiety Disorders Association of Canada recommends agomelatine, pregabalin, venlafaxine XR, duloxetine, escitalopram, paroxetine, or sertraline as first-line options, while the Anxiety and Depression Association of America suggests venlafaxine XR, duloxetine, paroxetine, escitalopram, sertraline, or fluoxetine [33; 34].

Oral Health Implications and Dental Treatment Modifications

As discussed, depression of the respiratory system and the CNS can occur with the use of benzodiazepines, especially in conjunction with alcohol or opioid analgesics. Dental clinicians should use non-opioid analgesics to treat pain if a patient is being treated with a benzodiazepine. Some dental practices use benzodiazepines to help calm apprehensive patients so they may receive treatment (marketed as "sleep dentistry"). Patients who are already taking a benzodiazepine to treat generalized anxiety disorder should not take an additional dose of any other benzodiazepine medication as an anxiolytic before dental treatment, as this combination can also potentiate respiratory and CNS depression.

Macrolide antibiotics (e.g., erythromycin, clarithromycin, azithromycin) used to treat odontogenic infections can increase blood plasma levels of alprazolam, with the potential for systemic toxicity. So, the simultaneous use of these medications is contraindicated [14]. Instead, alternative antibiotics (e.g., penicillin, amoxicillin, clindamycin) compatible with the patient's medical history should be used.

The pharmacokinetics of benzodiazepines should also be considered when medications are used adjunctive to dental treatment. Specifically, the half-life (i.e., the interval of time required to achieve a 50% reduction in blood plasma concentration) of benzodiazepines can be affected by drug interactions. An extended half-life results in a lingering drug effect [13].

Diazepam (via its active metabolite desmethyldiazepam) has a half-life that can range from 50 to 100 hours, compared with 40 hours for lorazepam and 11.2 hours for alprazolam [13]. Thus, the adverse interactions between diazepam and opioids can occur for approximately four days after the last dose of diazepam is taken. Although the half-lives of lorazepam and alprazolam are considerably less than that of diazepam, precaution for the expected half-lives of those drugs is also recommended.

Dental treatment modifications for patients with generalized anxiety disorder should be customized to reflect the degree to which the disorder affects their lives. Whether patients with generalized anxiety disorder have anxiety or phobias about dental treatment or not, dental treatment should progress at a pace and for a duration that does not challenge their emotional endurance. Oral manifestations of long-term anxiety can include destructive parafunctional habits such as bruxism, which can cause excessive wear of the teeth, fractures of existing restorations, temporomandibular joint disorders, and a decrease in the vertical dimension of occlusion. The fabrication of splints or night guards may be required to address these issues.

Anxiety can detract from the patient's desire and ability to maintain optimal oral hygiene. Dental staff should be supportive and use a non-judgmental motivational approach to encourage the patient to maintain an appropriate oral hygiene regimen that may include more frequent recall appointments. Alcohol, prescription drug, and/or illicit drug use may co-occur in patients with generalized anxiety disorder, which can lead to worsening symptoms and a high degree of morbidity and even

mortality if left untreated. It is incumbent that dental clinicians discuss their concerns with the patient in an appropriate way and make referrals to mental health care.

PANIC DISORDER

In the United States, 4% to 28% of the population experience panic attacks at some time during their life. The 2.4% annual incidence of panic disorder in the United States is one of the highest prevalence rates worldwide [36; 37].

Panic attacks are most likely to develop in patients who are in their mid-20s and slightly earlier in men than women. Panic disorder age of onset is usually between late adolescence and 35 years of age, while the age of onset for panic disorder with agoraphobia spans the early 20s to early 30s. Panic disorder is more common among women, with a 2:1 ratio and increasing to 3:1 with panic disorder with agoraphobia [36; 37].

The diagnostic criteria for panic disorder require [5]:

- Recurrent unexpected panic attacks
- One or more of the attacks followed by at least one month of one or both of the following:
  - Persistent concern or worry about additional panic attacks or their consequences
  - Significant maladaptive change in behavior related to the attacks

The symptoms must not be attributable to substance-related effects, other medical conditions, or other psychiatric disorders. Up to 70% of patients report a history of at least one nocturnal panic attack [38]. Patients may present with symptoms suggestive of heightened sympathetic nervous system activity such as palpitations, increased systolic blood pressure, hyperventilation, sweating, or flushing. Other common symptoms include chest pain and discomfort, dizziness, and paraesthesias, while gastrointestinal symptoms such as nausea and vomiting are more common among men [5; 39].

Criteria for panic attacks specify an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes and includes four or more of the following symptoms [5]:

- Palpitations, pounding heart, or accelerated heart rate
- Sweating
- Trembling or shaking
- Sensations of shortness of breath or smothering
- Feelings of choking
- Chest pain or discomfort
- Nausea or abdominal distress
- Feeling dizzy, unsteady, light-headed, or faint
- Chills or heat sensations
- Paresthesia (numbness or tingling sensations)
- Derealization (feelings of unreality) or depersonalization (being detached from oneself)
- Fear of losing control or going crazy
- Fear of dying

Panic attack is not classified as a mental disorder and does not have a diagnostic code. Instead, an attack can occur with other mental disorders, such as depressive and anxiety disorders, and can also co-occur with physical disorders.

Medical Treatment

Combined treatment is superior in panic disorder, with effects of combined psycho- and pharmacotherapy treatment versus placebo about twice as large as pharmacotherapy alone versus placebo [40]. The first-line drugs recommended for the treatment of panic disorder are SSRIs or venlafaxine XR [33]. Research suggests that the largest effect size is found with clonazepam, followed by venlafaxine and fluoxetine [41].

The use of medications can only reduce the frequency and intensity of a panic attack but cannot eliminate the situations or places that precipitated the attack. The goal of psychotherapy such as cognitive therapy is to discern the patient's beliefs and perceptions that may serve as the trigger for a panic attack and eliminate them as a source of the heightened anxiety from which a panic attack evolves [42]. The use and duration of medications and psychotherapy will vary according to individual needs.

Oral Health Implications and Dental Treatment Modifications

As discussed, the drugs used to treat panic disorder, specifically antidepressants and benzodiazepines, can interact with other drugs used in dental treatment and result in adverse or unintended effects. These potential interactions should be considered whenever prescribing or administering a medication to these patients.

Dental treatment of patients with panic disorder should begin with a discussion of the patient's medical history that includes the details of the places or situations that have served as triggers for panic attacks. It is also possible that a patient may be unaware that he or she is experiencing what might be a first panic attack. Further complicating the matter, the signs and symptoms can resemble those of serious medical emergencies, including myocardial infarction (heart attack), acute asthmatic attack, or hypoglycemic crisis. In these situations, emergency medical services should be summoned; distinguishing between a panic attack and a medical emergency is beyond the ability of dental professionals.

Conversely, patients with a known history of panic disorder may develop a medical emergency that mimics a panic attack. Patients believed to be experiencing a panic attack should never be left alone, and if there is any doubt as to the origin of the acute symptomatology, emergency medical services should be called.

Patients who experience a panic attack in a dental setting may defer or avoid dental treatment completely and increase their risk of the development of carious lesions and periodontal disease. These patients should be encouraged to continue to seek dental care, with the reassurance that steps can be taken to make the experience less triggering.

SPECIFIC PHOBIA

Specific, simple, or isolated phobia is the excessive or unreasonable fear of (and is restricted to) animals, objects, or specific situations (e.g., dentists, spiders, elevators, flying, seeing blood) [31]. Intense anxiety or unexpected panic responses in the presence of specific objects or situations can mark phobia onset but are not the sole causal route. Disgust, either alone or combined with fear, may trigger the onset and maintenance of animal (particularly spiders, snakes, and worms) or blood-injection-injury phobias. This is the most common type of anxiety disorder, with a lifetime prevalence of 15.6% and a past-year prevalence of 12.1% [36].

Women are two- to three-times more likely to develop phobias than men, with the exception of blood-injection-injury phobia, which is evenly distributed by sex. Roughly 70% of those with specific phobia report more than one clinically relevant fear. Animals and heights are the most common stimuli, followed by flying, enclosed spaces, and blood-injection-injury. The average age of onset is 7 to 10 years, with declining probabilities of onset into later adulthood. The majority of animal phobias develop before 8 years of age [5; 45; 46]. The average age of treatment engagement is 31 years, although only 8% of persons with specific phobia are reported to seek treatment [46].

Specific, simple, or isolated phobia describes excessive or unreasonable fear in the presence of phobic stimuli, typically involving specific animals, objects, or situations (e.g., dentists, spiders, elevators, flying, seeing blood). Phobic stimuli are either avoided or are endured with significant personal distress [31]. This fear or anxiety must be markedly stronger than the actual threat of the object or situation (e.g., likelihood of being stuck on a well-maintained elevator) [5].

Specific phobias can develop after a traumatic event or from witnessing traumatic events. The fear or anxiety happens every time the person is exposed to the stimulus and may include panic attack symptoms.

The median age of onset with specific phobia is 13 years [5]. According to the DSM-5-TR, specific phobia is diagnosed when the following criteria are met [5]:

- Marked fear or anxiety about a specific object or situation (e.g., flying, seeing blood)
- Phobic object or situation almost always provokes immediate fear or anxiety and is actively avoided or endured with marked fear or anxiety
- Fear or anxiety out of proportion to the actual danger posed by the specific object or situation
- The fear, anxiety, or avoidance is persistent, typically at least six months
- Marked distress or functional impairment

Specific phobia subtypes are organized by phobia categories:

- Animal: Dogs, snakes, insects
- Natural environment: Storms, heights, dark
- Blood-injection-injury: Injections, blood draws, medical/dental procedures
- Situational: Driving, flying, enclosed spaces
- Other: Choking, vomiting, clowns

Medical Treatment

Patients with specific phobias generally do not consult medical professionals when able to avoid the specific feared situations or objects. Exposure therapy is effective in treating specific phobia and is the favored approach. For blood-injection-injury phobias, an effective approach is combining exposure therapy with muscle tension exercises (applied tension) designed to prevent fainting. Using stress-reducing medical devices, such as decorated butterfly needles and syringes, has significantly reduced needle phobia and stress in pediatric and adult patients. With dental phobias, use of cognitive-behavioral therapy can reduce avoidance of oral injections and decrease patient anxiety [42; 47].

Oral Health Implications and Dental Treatment Modifications

It is essential that a discussion that is based on empathy and compassion reveals situations within the dental setting that cause anxiety of such a magnitude that they have precipitated phobia and/or a panic attack in the past for the patient and have the potential to do so in subsequent dental appointments. As noted, modifying treatment and/or devises to reduce stress is recommended to allow dental treatment to proceed.

POST-TRAUMATIC STRESS DISORDER

Post-traumatic stress disorder (PTSD) is a severe, potentially chronic and disabling disorder that develops in some persons following exposure to a traumatic event involving actual or threatened death, serious injury, or sexual assault [49]. Some common symptoms include intrusive thoughts, nightmares and flashbacks of traumatic events, avoidance of trauma reminders, hypervigilance, and sleep disturbance. These symptoms can be highly distressing and substantially impair social, occupational, and interpersonal functioning. The intensely distressing and impairing symptoms of traumatic stress are highly prevalent immediately following traumatic exposure and dissipate over the following days and weeks in most people. Persistence beyond one month post-trauma suggests PTSD [49].

Large community surveys indicate that 50% to 75% of people report experiencing at least one lifetime traumatic event [50]. A U.S. survey from 2001–2003 of 5,692 participants 18 years of age or older found lifetime PTSD prevalence rates of 6.8% overall—3.6% in men and 9.7% in women. Also found were past-year prevalence rates of 3.5% overall, with 1.8% in men and 5.2% in women. These rates were very similar to those of a large survey in the early 1990s that found a lifetime PTSD prevalence rate of 7.8% overall, with 5% in men and 10.4% in women [50].

MEDICAL TREATMENT

The overall objective of PTSD therapy is to treat the four core symptom clusters of intrusive re-experiencing, avoidance, negative alterations in cognitions and mood, and hyperarousal. Psychotherapy is the backbone of PTSD therapy, with pharmacotherapy used as an adjunct if necessary. Primary care clinicians should be aware of the range of therapeutic options along with their advantages and disadvantages (e.g., time commitment, side effects, risks) and be able to explain these to the patient.

Therapies for PTSD are broadly divided into psychotherapies, pharmacotherapies, and adjunctive or supplemental treatment modalities. Selection of the initial pharmacologic approach is based on clinician and patient choice and guided by the manifesting symptoms of PTSD, other disorders, and patient preference, with polypharmacy choice dictated by clinical presentation and co-occurring psychiatric disorders [51]. SSRIs are widely recommended as first-line agents in the treatment of PTSD [51]. Other possible drug choices include SNRIs, TCAs, monoamine oxidase inhibitors, sympatholytics, benzodiazepines, anticonvulsants, and atypical antipsychotics.

ORAL HEALTH IMPLICATIONS AND DENTAL TREATMENT MODIFICATIONS

Dental clinicians should be aware of these potential adverse drug interactions and side effects of the medications used to treat PTSD when they perform dental procedures and prescribe medications adjunctive to dental treatment. Paroxetine is an SSRI that has been found effective in the short-term treatment of PTSD; however, it has been associated with xerostomia. Normal salivary flow resumes upon discontinuation. The concurrent use of paroxetine and NSAIDs (e.g., ibuprofen, naproxen) can decrease platelet aggregation, and should be avoided if possible. Opioid analgesics may potentiate the effect and toxicity of paroxetine, so their concurrent use should be minimized or avoided [13].

Prior to the initiation of dental treatment for patients with PTSD, it is essential to establish an atmosphere of trust and open communication. In some cases, paranoia or heightened startle reflexes may be present. Patients may associate being placed in a supine position in the dental chair and having their personal space encroached upon by a dental professional with the loss of control experienced during their trauma. An open line of communication will allow for disclosure of these issues and provide a means for resolution.

The efficacy of the patient's oral hygiene should be evaluated at each recall visit, as medication-induced xerostomia can compromise ability to maintain optimal oral hygiene. Hygiene instructions and recall appointments should be tailored to the needs of the patient. Concurrent use and/or misuse of alcohol or recreational/prescribed medications should also be evaluated. A team approach involving the dental and medical team should be used to restore the patient to an ideal level of physical, mental, and emotional health.

SCHIZOPHRENIA

Schizophrenia is a complex psychotic disorder that affects less than 1% of the population, with a nearly equal distribution between men and women. Onset occurs later in women compared with men [54]. Symptoms of schizophrenia comprise three broad categories: positive, negative, and cognitive.

Positive symptoms include auditory (most common), olfactory, visual, or tactile hallucinations. Paranoid delusions, delusions of persecution, and grandiose delusions also occur. Thought disorders, characterized by a dysfunctional pattern of thinking, are another type of positive symptom. Finally, movement disorders commonly occur and tend to feature exaggerated and/or agitated body movements.

Negative symptoms are disruptions in normal emotions and behaviors. This may manifest in a variety of emotional issues and behaviors such as flat affect, anhedonia (i.e., a loss of pleasure in the activities of daily life), and difficulty initiating and sustaining activities. Less commonly, patients may display catatonia, with markedly depressed or absent movement and responses.

Cognitive symptoms tend to be more difficult to discern and include poor executive functioning (i.e., ability to understand information and use it to make decisions), difficulty concentrating, and memory issues [54]. A diagnosis of schizophrenia is made when a patient has two or more of the following symptoms for at least one month [5]:

- Hallucinations
- Catatonic movements
- Delusions
- Disorganized speech patterns
- Flattened affect
- Alogia (restricted amount and/or content of speech)
- Disruptions in social or occupational abilities

The exact cause of schizophrenia remains unclear, although a combination of biochemical factors and a genetic influence may contribute. The chance of a child developing schizophrenia is 10% to 13% if one parent has schizophrenia but escalates to 46% if both parents have schizophrenia [55].

MEDICAL TREATMENT

Schizophrenia is a disease with periods of remissions or mild symptoms, but for most patients, it is a long-term, recurring condition. As such, treatment generally continues throughout a patient's life.

Treatment of schizophrenia involves a combination of pharmacotherapy and psychosocial therapy. Most often, medications include typical (first generation) and atypical (second generation) antipsychotics [56]. The most frequently used typical antipsychotics are chlorpromazine, haloperidol, and perphenazine. These medications will address the positive symptoms of schizophrenia, but they do not ameliorate negative symptoms.

ORAL HEALTH IMPLICATIONS AND DENTAL TREATMENT MODIFICATIONS

Xerostomia is a potential adverse effect of antipsychotic medications, with a resumption of normal salivary production upon cessation of use. However, because pharmacotherapy will continue indefinitely, efforts should be made to improve comfort and oral health with saliva substitutes and other palliative interventions.

A more pronounced adverse effect of typical antipsychotic medications is tardive dyskinesia— involuntary movements of the tongue, lips, facial muscles, limbs, and trunk of the body [57]. This adverse effect can take months or years to develop and although it occurs predominantly with the use of the typical antipsychotics, it can also occur with the use of atypical agents.

Tardive dyskinesia is usually mild and reversible; however, it can become severe and irreversible in a small percentage of patients. Benzodiazepines and anticholinergics (e.g., diphenhydramine) can decrease the intensity of the symptoms, but these agents are also associated with oral and systemic adverse effects. Discontinuing a typical antipsychotic to alleviate the symptoms of tardive dyskinesia can increase the severity of the patient's schizophrenia and should only be done under psychiatric supervision.

In terms of oral health, the involuntary movements of the oral musculature seen with tardive dyskinesia can complicate the patient's ability to eat, speak, swallow, and remain stationary during dental procedures. Spasmodic activity of the intrinsic and extrinsic muscles of the tongue, cheeks, and floor of the mouth can preclude the use of mandibular partial or complete dentures, which rely on a balance of muscular control for their retention. Involuntary movement of the muscles of the soft palate can disrupt the suction seal at the posterior border of a maxillary denture and compromise the patient's ability to wear this prosthesis. Involuntary muscular activity of the fingers and the hands can present a challenge to maintain optimal levels of oral hygiene, increasing the risk for plaque deposits, dental caries, and periodontal disease. The frequency of recall appointments should reflect the patient's ability to maintain an appropriate level of oral hygiene in the presence of medication-induced xerostomia and/or tardive dyskinesia.

Typical antipsychotics can result in leukopenia, a condition characterized by decreased production of white blood cells (leukocytes) and particularly granulocytic leukocytes (i.e., neutrophils, basophils, and eosinophils) (referred to as agranulocytosis) [13]. Leukocytes are a critical component of an intact immune system and a decrease in production increases the risk for opportunistic oral and systemic infections. For example, impaired immune function can result in the overgrowth of the resident oral fungal organism *Candida albicans*, leading to oral candidiasis. This infection can be refractory to oral antifungal suspensions and systemic antifungal medications. Unchecked, it may extend regionally or systemically, with a high degree of morbidity and even mortality. Similarly, reactivation of herpes simplex virus-1 (HSV) and the development of recurrent herpes labialis is likely with impaired immunity.

Before invasive dental procedures are performed, a complete blood count with differential should be ordered for patients with schizophrenia who are prescribed a typical antipsychotic. The results can help guide decisions to decrease the risk of postsurgical infections and prolong healing.

Chlorpromazine, perphenazine, and haloperidol can potentiate the systemic depressant effects of opioids [14]. If possible, other pain relief methods should be used for patients who use these antipsychotics. Weight gain, dizziness, insomnia, and fatigue are among the more frequently occurring adverse effects of atypical antipsychotics.

Akathisia (a general sense of restlessness) may develop and can interfere with a patient's ability to remain stationary or seated [58]. Even aside from drug side effects, patients with schizophrenia may find it difficult or impossible to remain still in a dental chair for long appointments. As such, shorter appointments may be necessary to complete required dental treatment.

Dysphagia (difficulty swallowing), dysgeusia (distorted perception of taste), and stomatitis (generalized inflammation of the mucosal surfaces of the oral cavity) are also among the potential adverse effects of atypical antipsychotic medications [55]. Patients who wear partial or complete dentures may be unable to use these prostheses in the presence of stomatitis. If eating or swallowing are painful or impossible, liquid nutritional supplements may be necessary. Erosive areas of stomatitis can serve as portals of entry for pathogenic oral microbes, which can lead to local, regional, or systemic infections.

The concurrent use of anxiolytic medications or opioids with risperdone or olanzapine can exacerbate the respiratory depressive effects of the medications, increasing the risk of respiratory arrest [60]. Therefore, these combinations should only be attempted if absolutely necessary and upon approval of the patient's physician.

Dental treatment modifications of schizophrenic patients should be individualized, with consideration of the stability of the patient, current medication(s), and the presence of comorbidities. Consultation with the patient's physician and/or psychiatrist is advisable before beginning dental treatment.

Atypical antipsychotics have been associated with orthostatic hypotension [61]. This can be exacerbated when a patient in a dental chair is raised abruptly from supine to upright position. With this in mind, patients should be raised in a slow, incremental fashion to allow for appropriate regulation of blood pressure.

SOMATIC SYMPTOMS AND RELATED DISORDERS

Somatic symptoms and related disorders are a group of psychiatric conditions in which the patient presents with physical symptoms for which no underlying medical or organic cause can be identified. Previously known as somatoform disorders, the DSM-5-TR consolidated the number and description of these disorders under the title of Somatic Symptoms and Related Disorders, which will be the term used for this course. The prevalence of somatic symptoms and related disorders is 16.1% to 21.9% in the general population [62]. In order to establish a diagnosis of somatic symptoms and related disorders, the symptoms must [5]:

- Not be explained by a known medical condition, another mental disorder, or by the use of a medication or another substance
- Not be the result of malingering or factitious disorder
- Cause impairment with occupational and social activities or in the activities of daily living

Even with these criteria, establishing a diagnosis of somatic symptoms and related disorders is challenging.

MEDICAL TREATMENT

Treatment for somatic symptoms/disorders involves psychotherapy to identify the ultimate psychogenic etiology. The primary dental treatment concern is the avoidance of unnecessary treatment and referral to the appropriate specialists for patients with these disorders when oral or odontogenic pathology cannot be discerned from a comprehensive clinical and radiographic examination or when these problems are successfully resolved and symptoms persist.

ORAL HEALTH IMPLICATIONS AND DENTAL TREATMENT MODIFICATIONS

Pain Disorder

Pain disorder is considered a somatic disorder characterized by pain for which no organic or physical etiology can be identified. In patients with this disorder, psychologic factors such as stress, anxiety, and depression usually precede the onset of pain and can influence its severity and duration. The perception of pain can occur anywhere, including the oral and maxillofacial complex. Patients may complain of odontogenic pain even after a complete radiographic survey and clinical examination rules out dental caries, endodontic pathology, and defective restorations.

Atypical facial pain can be of varying durations and can occur in varying locations. Common oral manifestations of pain disorder include atypical facial pain and oral dysesthesia [64]. The pain may be described as burning or tingling, sharp, dull, or as a sensation of pressure or crushing [65]. Other conditions that can cause an oral burning sensation (e.g., vitamin B12 deficiency, erythematous candidiasis) should be ruled out before a somatic disorder is considered.

It is important not to equate the absence of obvious oral or odontogenic pathology with a somatic disorder. Likewise, providing dental treatment and/or analgesic prescriptions is not recommended without knowledge of the underlying cause of pain. When there is no apparent etiology for expressed pain, referral to another healthcare professional (e.g., an oral surgeon, primary care physician, neurologist) should be given to determine if the pain has an etiology beyond the oral and maxillofacial complex.

Hypochondriasis

Hypochondriasis is a somatic disorder in which the patient is convinced that his/her physical symptoms are indicative of a life-threatening medical condition. Hypochondriasis affects 1% to 8% of the population, and its diagnosis is made if the patient maintains a nondelusional preoccupation with the symptoms for at least six months [63]. In the dental setting, a patient who has pain in the oral-pharyngeal area may be convinced the pain originates from malignancy.

If a thorough clinical and radiographic exam detects pathology (e.g., caries, periodontal disease, oral lesions, endodontic pathology), these issues should be treated first. If a patient's symptoms persist upon the successful resolution of these problems and in the absence of any other evident pathology, the patient should be referred to a specialist. Patients with hypochondriasis may not be reassured even if clinical examinations and tests do not reveal any further pathology.

SUBSTANCE USE DISORDERS

Substance use disorder (SUD) is considered a mental illness and can undermine individuals' physical, psychologic, social, and emotional health and safety. The DSM-5-TR identifies 10 classes of drugs that may be linked to an SUD: alcohol, caffeine, cannabis, hallucinogens, inhalants, opioids, sedatives, hypnotics or anxiolytics, stimulants, and nicotine (tobacco) [5]. Although they are outlined individually, individuals may have more than one SUD concurrently.

Diagnosis of SUD is made when at least two of the following symptoms within a 12-month period [5]:

- Use or consumption of more of a substance than planned
- Inability to control or stop use
- Spending an extensive amount of time using the substance(s) and using any means to obtain it/them
- Continued substance use results in failure to fulfill personal and professional obligations
- Cravings for the substances(s)
- Continued use of the substance(s) despite emerging or worsening health problems
- Continued use of the substance(s) despite a negative impact on personal or professional relationships
- Use of the substance(s) in dangerous situations such as driving or using heavy machinery
- Withdrawing from activities because of substance use
- Developing a tolerance to the substance(s), defined by:
  - A need for markedly increased amounts to achieve intoxication or desired effect
  - A markedly diminished effect with continued use of the same amount
- Experiencing withdrawal symptoms when the use of the substance(s) stops

SUDs transcend geographic boundaries, sex/gender, race, ethnicity, and socioeconomic status. It is important to remember that SUD is a mental illness and not a character flaw or the result of a lack of willpower. Patients with a SUD should be treated with the same empathy and concern conveyed to any patient with a mental illness.

It is important to understand some of the most common terms used when discussing SUDs. Addiction is defined by the American Society of Addiction Medicine (ASAM) as a "treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual's life experiences. People with addiction use substances or engage in behaviors that become compulsive and often continue despite harmful consequences" [66]. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving. The ASAM also notes as part of their definition of addiction that "prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases" [66].

Tolerance refers to the diminishing effect of a substance over time. A patient has developed tolerance if it takes an increased dose of the drug to illicit the same effects. The term dependence has replaced the term "addiction" in some contexts. Substance dependence refers to both psychologic dependence (or addiction) and physical dependence. Physical dependence consists of neurobiologic adaptation (development of tolerance) from chronic exposure.

Most dental clinicians will treat a patient with a SUD during their careers. If a patient is suspected of having an SUD, it is imperative to be non-judgmental and empathetic in discussions with the patient and to provide a pathway for the patient to receive appropriate treatment.

Specific drugs of abuse will have different effects on users. All dental professionals should have knowledge of the most commonly abused drugs, their systemic and oral effects, and best practices when providing care to these patients. The following sections introduce the most common SUDs encountered in dental practice.

OPIOID USE DISORDER

Few medications have been highlighted as much in recent years as opioid analgesics. This is largely due to the high risk of misuse and diversion associated with these medications. However, the first reference to opium is found in the 3rd century B.C.E. The use of opium was well-understood by Arab physicians, and Arab traders introduced the drug to Asia, where it was utilized primarily for the control of dysentery [67].

The isolation of morphine from opium was achieved in 1806 and was named for Morpheus, the Greek god of dreams [67]. The discovery of other alkaloids in opium followed: codeine in 1832 and papaverine in 1848. By the mid-nineteenth century, pure alkaloids were used in medical practice in place of crude opium preparations [67].

In addition to the highly beneficial therapeutic effects, the toxic side effects and addictive potential of opioids have been known for centuries. These undesired effects have prompted a search for a potent synthetic opioid analgesic free of addictive potential and other complications. However, all synthetic opioids introduced into medical use share the same liabilities of the classical opioids. The search for new opioid therapeutics has resulted in the synthesis of opioid antagonists and compounds with mixed agonist-antagonist properties, such as buprenorphine, which has expanded therapeutic options and provided the basis of expanded knowledge of opioid mechanisms [67].

Nonmedical use of prescription opioids was reported in literature as early as 1880. A report in 1928 documented that injection of opioids contributed to the development of nonmedical use and misuses of prescription opioids. Before 1930, the prevalence of nonmedical opioid injecting in the United States was low. But by the mid-1940s, more than one-half the admissions to the National Institute of Mental Health's Lexington Hospital were for the misuse of prescription opioids [68].

Opioid broadly refers to all compounds related to opium. The term opium is derived from *opos*, the Greek word for "juice," as the drug is derived from the latex sap of the opium poppy *Papaver somniferum*. Drugs derived from opium, including

OPIOID ANALGESIC APPROXIMATE DOSE EQUIVALENTS			
Opioid Analgesic	**Oral Dose**	**Parenteral Dose**	**Morphine Equipotency Ratio, Oral**
Morphine	30 mg	10 mg	Reference opioid
Codeine	200 mg	100 mg	Not established
Fentanyl (transdermal)	Not applicable	100 mcg	Not applicable
Hydrocodone (Zohydro ER)	30–45 mg	Not applicable	1.5:1
Hydromorphone (Exalgo ER)	8 mg	2 mg	5:1
Levorphanol	4 mg	2 mg	Not established
Oxycodone (OxyContin ER)	20–30 mg	10–15 mg	2:1
Source: [69; 70]			*Table 1*

the natural products morphine, codeine, and thebaine, may be referred to as opiates [67]. However, for the purposes of simplification, all compounds will be referred to as opioids in this course.

Morphine is the reference against which other opioids are compared, and analgesic potency is calculated as dose equivalence to morphine (i.e., morphine milligram equivalent or MME). ***Table 1*** shows a typical equianalgesic-dose table with figures validated for acute pain in opioid-naïve patients and conversions for opioid-tolerant patients [69; 70].

Morphine and most other opioid agonists share in common the following physiologic effects [67]:

- Analgesia
- Changes in mood and reward behavior
- Disruption of neuroendocrine function
- Alteration of respiration
- Changes in gastrointestinal and cardiovascular function

Pharmacology

Opioids have been the mainstay of pain treatment for thousands of years, exerting their effects by mimicking naturally occurring endogenous opioid peptides or endorphins [67]. Although many new opioids have been developed with pharmacologic properties similar to morphine, morphine remains the standard against which new analgesics are measured [67].

Endogenous Opioid Peptides

The endogenous opioid system is complex and subtle, with diverse functions. The system plays a sensory role, which is prominent in inhibiting response to painful stimuli; a modulatory role in gastrointestinal, endocrine, and autonomic functions; an emotional role evidenced by the powerful rewarding and addicting properties of opioids; and a cognitive role involving modulation of learning and memory [67].

There are three distinct families of classical opioid peptides: enkephalins, endorphins, and dynorphins. Each of these families is derived from a distinct precursor protein and has a characteristic anatomical distribution. The precursor proteins, preproenkephalin, pro-opiomelanocortin (POMC), and preprodynorphin are encoded by three corresponding genes. The primary opioid peptide derived from POMC is beta-endorphin. The POMC precursor is also processed into the non-opioid peptides adrenocorticotropic hormone (ACTH), melanocyte-stimulating hormone (alpha-MSH), and beta-lipotropin (beta-LPH), suggesting a common precursor for the stress hormone ACTH and the opioid peptide beta-endorphin. This association indicates a shared physiologic linkage between the stress axis and opioid systems, which has been validated by the observation of stress-induced analgesia [67].

Opioid Receptors

Opioids produce their effects through activity at three major receptor subtypes: mu, kappa, and delta. These G-protein-coupled receptors are linked to adenylate cyclase. The endogenous ligands for these receptors, beta-endorphin, enkephalin, and dynorphin, are expressed heterogeneously throughout the central and peripheral nervous systems, with a distribution pattern parallel with that of opioid receptors. Opioid receptors are also found in the central respiratory centers. Functional studies have revealed substantial parallels between mu and delta receptors and dramatic contrasts between mu/delta and kappa receptors [71].

Most opioid therapeutics, and all opioids with abuse potential, are selective for mu receptors, reflecting their similarity to morphine. However, drugs that are relatively selective at standard doses can interact with additional receptor subtypes at higher doses, resulting in divergent pharmacologic profiles [67]. A large number of endogenous ligands activate a small number of opioid receptors, a pattern strikingly different from most other neurotransmitter systems, in which a single ligand interacts with a large number of receptors that have different structures and second messengers [67].

Absorption, Distribution, Metabolism, and Elimination

Typically, opioids are readily absorbed from the gastrointestinal tract. The more lipophilic opioids are easily absorbed through the nasal or buccal mucosa. The most lipophilic opioids can be absorbed transdermally [67]. Most opioids, including morphine, undergo variable but significant hepatic first-pass metabolism, limiting oral bioavailability relative to parenteral administration. Most opioids act quickly when given intravenously. Compared with more lipid-soluble opioids, such as codeine, heroin, and methadone, morphine crosses the blood-brain barrier at a considerably lower rate [67].

Risk Factors for Opioid Use Disorder

Persons at heightened risk for opioid misuse or dependence include those who have a current or past history of substance misuse/abuse, individuals with untreated psychiatric disorders, and those with social or family environments that facilitate or encourage misuse [72]. It is estimated that approximately 6.7 to 7.6 million adolescents and adults in the United States are living with opioid use disorder at any given time [73].

The expected drug effect and the setting of use (context of administration) play important roles in the social learning of drug use. Because opioids, like other drugs that increase dopamine turnover, lead to conditional responses, the use of opioids may become conditioned to the activities of daily living. As a result, environmental stimuli become powerfully associated with opioid use, which can trigger cravings for the drug. The visibility of pharmaceutical marketing and advertising of medications may also play a role by changing the attitudes towards ingestion of these agents.

For youth, a social learning aspect to drug use is likely, based on the modeling of drug use by adults in their families and social networks [72]. Studies have found that 15% of high school students reported having ever used select illicit or injection drugs (i.e., cocaine, inhalants, heroin, methamphetamines, hallucinogens, or ecstasy); in addition, 14% of students reported misusing prescription opioids [74]. Individuals who use nonmedical prescription opioids before 13 years of age are more likely to become addicts than those who initiated use at 21 years of age or older. The odds of becoming an addict are reduced 5% each year after 13 years of age [75]. Additionally, it is a commonly held view among adolescents (27%) that prescription drugs are "much safer" than street drugs [76]. This belief is undoubtedly shared with much of the adult population and has led to the extraordinary rise in recreational prescription drug users.

Dental Treatment Considerations

Responsible prescribing of opioids is an essential measure to avoid contributing to and escalating the opioid crisis in the United States. Opioid analgesics are generally not used as first-line analgesic therapy; non-drug and non-opioid drug alternatives should be considered first. Opioids may be initiated when benefits are likely to outweigh risks, when other approaches to analgesia are ineffective or unlikely to be effective, and with a treatment plan designed to mitigate the risks of addiction, toxicity, and other adverse effects.

Dental pain after oral or periodontal surgery is caused by the release of prostaglandins from injured tissues. This type of pain is generally best managed by nonsteroidal anti-inflammatory drugs (NSAIDs), which inhibit prostaglandin formation. NSAIDs act locally while opioids act centrally, which results in greater and more dangerous side effects. Several controlled studies have concluded that NSAIDs, with or without adjunctive acetaminophen, provide equivalent or superior dental pain relief when compared to opioids [77]. The recommended dose of ibuprofen for mild post-procedural dental pain is 200–400 mg every four to six hours; alternatively, 400–600 mg ibuprofen combined with 500 mg acetaminophen every six hours may be used. If severe pain develops and an opioid analgesic is indicated, it is vital to start with the lowest possible dose for three days, after which the patient can be switched to ibuprofen with or without acetaminophen [78]. The American Dental Association supports statutory limits on the dosage and duration of opioid analgesics of no more than seven days for the treatment of acute dental pain [79]. Dental clinicians can also use techniques, including atraumatic surgical technique and long-lasting local anesthetics (e.g. bupivacaine), to minimize postprocedural pain and the need for analgesia.

If an opioid use disorder is disclosed or suspected, steps should be taken to increase patient safety and minimize the risk of misuse and dependence. In patients with opioid use disorder, nitrous oxide inhalation analgesia should be avoided, as it creates a similar pleasurable effect to opioids and can increase cravings. Benzodiazepines have become a popular adjunct medication to reduce dental-related anxiety ("sleep dentistry"), but coingestion of opioids and this class of medications elevates the risk of pronounced respiratory depression and fatality [80].

Patients with opioid use disorder are more prone to the development of xerostomia, caries, periodontal disease, and oral infections [61]. As discussed, the decreased flow and volume of saliva associated with xerostomia reduces the self-cleaning action of the teeth, increasing the risk of dental caries and periodontal disease.

Although the patient's medical history is reviewed prior to any dental treatment, he or she may not disclose current or historical opioid misuse or addiction. If a patient has a suspected opioid use disorder, the clinician should initiate an open, judgement-free discussion that focuses on the long-term well-being of the patient. Through responsible prescribing practices and patient referral, if appropriate, dental clinicians can help address the opioid crisis and provide the best level of patient care.

BENZODIAZEPINE USE DISORDER

For years, anxiolytic medications have been used in dental practice to decrease anxiety and allow treatment to be provided comfortably. Benzodiazepines provide a level of sedation that allows for significant relaxation but continued response to ver-

bal commands and questions. Outside of dental practice, these agents may be used in the treatment of insomnia, generalized anxiety disorders, convulsive disorders, and seizure disorders. However, benzodiazepines are associated with potential problems with abuse and addiction.

Benzodiazepines are CNS depressants that enhance the major inhibitory neurotransmitter gammaaminobutyric acid (GABA) and decrease brain activity [82]. Benzodiazepines are distinct in their potentially lengthy duration of action; some agents produce active metabolites that extend their pharmacologic effect.

When used in dental practice, benzodiazepines are prescribed for a short period, usually just the night before and/or immediately preceding the appointment. Often, diazepam 5–10 mg is used for this purpose. The primary concern with diazepam is its extended duration of action, especially if opioids are also prescribed for postprocedural pain. Diazepam is metabolized as the active metabolite desmethyldiazepam, the half-life of which is 100 hours [13]. This prolonged duration of action far exceeds the duration of a dental appointment and can leave the patient in a sedated state with decreased mental acuity. It can also interact with opioid analgesics to potentiate the sedating and respiratory depression effects.

The ideal anxiolytic medication for dental appointments would provide adequate sedation with a short half-life. As such, triazolam is a better option, with a plasma half-life of two to three hours and rapid clearance that allows the patient to resume regular activities quickly [83]. Patients should be advised to refrain from alcohol while taking benzodiazepines because of the risk for CNS depression.

At the dose and duration benzodiazepines are used in dental practice, addiction and withdrawal symptoms are unlikely. However, some dental patients are on long-term benzodiazepine therapy for a mental health disorder (e.g., generalized anxiety disorder). The long-term use of these medications is associated with the potential for tolerance, physical dependence, addiction, and withdrawal symptoms.

Among patients who have used benzodiazepines for longer than six months, approximately 40% will experience moderate-to-severe withdrawal symptoms; the remaining 60% will experience mild symptoms upon abrupt cessation [84]. The most common benzodiazepine withdrawal symptoms include anxiety, panic attacks, insomnia, nightmares, depression, night sweats, heart palpitations, muscle pain, and problems with memory and concentration [85].

Dental Treatment Considerations

If a dental patient is known to be on long-term benzodiazepine therapy, consultation with the individual's physician or psychiatrist may be required to ensure that the medication can be safely continued or halted. As discussed, opioid analgesics should be avoided if possible in these patients. Similarly, nitrous oxide inhalation sedation can enhance the CNS depressant effects of benzodiazepines and should be avoided.

Withdrawal from benzodiazepines must be done under medical supervision and usually features a gradually decreasing dose. The expected severity of withdrawal from benzodiazepines can be assessed using the Clinical Institute Withdrawal Assessment—Benzodiazepines (CIWA-B) tool, which consists of 22 items. Higher scores indicate increasing difficulty and morbidity with the withdrawal symptoms [85].

Although there are no oral lesions specific to benzodiazepine use, xerostomia is a potential adverse oral effect. Personalized oral hygiene instructions and a more frequent recall schedule can promote optimal oral health for patients who experience this adverse effect. Consultation with the patient's physician should be sought if there is any concern about the patient's ability to withstand dental treatment.

ALCOHOL USE DISORDER

No substance, legal or illegal, has a more paradoxical mythology than alcohol. It is undeniably one of the most widely and safely used intoxicants in the world; however, it is also potent and dangerous, both from a psychologic and a physiologic viewpoint. Alcohol is currently responsible for more deaths and personal destruction than any other known substance of abuse, with the exception of tobacco. Substances of abuse are often put into categories based on their effects. Alcohol has effects similar to other depressants. Characteristics include:

- Decreased cognitive function while intoxicated
- Decreased inhibition and increased impulsivity
- Risk of overdose
- Development of depressive symptoms in heavy users
- Withdrawal symptoms similar to other depressants
- Symptoms of anxiety during withdrawal
- Substance-induced psychoses in some heavy users

There are several known risk factors for alcohol use disorders, including [86; 87]:

- Temperament: Moodiness, negativity, and provocative behavior may lead to a child being criticized by teachers and parents. These strained adult-child interactions may increase the chances that a child will drink.
- Hyperactivity: Hyperactivity in childhood is a risk factor for the development of adult alcohol use disorders. Children with atten-tion deficit hyperactivity disorder (ADHD) and conduct disorders have increased risk of developing an alcohol use disorder. Childhood aggression also may predict adult alcohol abuse.
- Parents: The most compelling and largest body of research shows parents' use and attitudes toward use to be the most important factor in an adolescent's decision to drink.

- Gender: Among adults, heavy alcohol use is almost three times more common among men than women and also more common among boys in middle or high school than among girls. Men with ADHD and/or conduct disorders are more likely to use alcohol than men without these disorders, while women who experience more depression, anxiety, and social avoidance as children are more likely to begin using alcohol as teens than women who do not experience these negative states.
- Psychology: Bipolar disorder, schizophrenia, antisocial personality disorder, and panic disorder all also increase the risk of a future alcohol use disorder.

Alcohol use disorder is a primary and chronic disease that is progressive and often fatal; it is not a symptom of another physical or mental condition. It is a disease in itself, like cancer or heart disease, with a very recognizable set of symptoms that are shared by others with the same disorder. About 29.5 million people (12 years of age and older) in the United States met DSM-5-TR criteria for alcohol use disorder in 2022 [88].

Dental professionals should understand the criteria and warning signs of alcohol use disorder. This enables safe patient care and earlier confrontation and intervention. Verifying the facts that show a person is at risk for alcohol use disorder and confronting the impaired individual with those facts is the definition of an office or brief intervention. Brief intervention is most effective before dependence is reached. Once diagnosable, the patient needs more comprehensive intervention.

Dental Treatment Considerations

Alcohol consumption can affect a variety of physiologic and psychologic processes, and persons who are currently inebriated should have dental treatment deferred. Although alcohol use disorder is not associated with any specific oral lesions, there are several areas of oral involvement that may be associated with excessive and/or long-term alcohol consumption. Excessive drinking may interfere with the absorption, digestion, metabolism, and utilization of nutrients, particularly vitamins. Individuals with alcohol use disorder often use alcohol as a source of calories to the exclusion of other food sources, which may also lead to a nutrient deficiency and malnutrition. In the late stage of the disease, patients may develop anorexia or severe loss of appetite, and refuse to eat. Persons with alcohol use disorder account for a significant proportion of patients hospitalized for malnutrition [89].

Direct toxic effects of alcohol on the small bowel causes a decrease in the absorption of water-soluble vitamins (e.g., thiamine, folate, B6). Studies have suggested that alcoholism is the most common cause of vitamin and trace-element deficiency in adults in the United States. Alcohol's effects are dose dependent and the result of malnutrition, malabsorption, and ethanol toxicity [90]. Vitamins A, C, D, E, K, and the B vitamins are deficient in some individuals with alcohol use disorder. All of these vitamins are involved in wound healing and cell maintenance. Because vitamin K is necessary for blood clotting, deficiencies can cause delayed clotting and result in excess bleeding. Vitamin A deficiency can be associated with night blindness, and vitamin D deficiency is associated with softening of the bones. Deficiencies of other vitamins involved in brain function can cause severe neurologic damage (e.g., deficiencies of folic acid, pyridoxine, thiamine, iron, zinc). Thiamine deficiency from chronic heavy alcohol consumption can lead to devastating neurologic complications, including Wernicke-Korsakoff syndrome, cerebellar degeneration, dementia, and peripheral neuropathy [91].

Alcohol abuse is a major risk factor for many infectious diseases. While respiratory infections are the most common, opportunistic oral infections may also occur, including candidiasis, angular cheilitis, necrotizing ulcerative gingivitis, and recurrent herpes labialis. Odontogenic infections of pulpal and/or periodontal origin are more virulent in persons with compromised immune systems and can have an aggressive extension into deeper fascial and muscle layers, with the potential for serious morbidity. Infections of rapid onset and regional dissemination require intravenous antibiotics and may require hospital admission. Dental clinicians who observe these opportunistic oral infections should discuss the finding with the patient.

Chronic alcohol abuse can also have an adverse effect on the salivary glands. In some cases, this manifests as bilateral enlargement of the parotid glands, known as sialosis. Sialosis is the result of peripheral neuropathy induced by chronic exposure to ethanol and reduced salivary flow [61].

A decrease in the buffering ability of the saliva results in a more acidic environment and proliferation of caries and *Candida albicans.* Prescription-strength fluoride toothpaste or gels can help reduce this risk.

The teeth of an individual with alcohol use disorder may be eroded due to the repetitive chemical (acidic) exposure to alcoholic drinks or vomit, resulting in perimolysis. The process of dental erosion can affect any tooth but the palatal surfaces of the maxillary teeth are most frequently affected. The classic presentation of an eroded tooth surface is smooth and shiny surface dentin. This exposed dentin can be sensitive to thermal changes and sweets. Erosive wear can undermine dental restorations and lead to a progressive loss of the vertical dimension of occlusion. Teeth with extensive loss of enamel can be difficult to restore.

The long-term abuse of alcohol has been shown to cause bone marrow suppression [93]. This can lead to a diminished number of neutrophils, which have a critical role in phagocytizing bacteria associated with periodontal disease. This deficiency can predispose individuals with alcohol use disorder to opportunistic infections and more severe periodontal disease.

A deficiency in the quantity or the quality of platelets can impair the ability to obtain hemostasis after oral surgery, periodontal surgery, or root planing and curettage. Conducting a complete blood count (CBC) with differential can determine if platelet levels are sufficient to obtain hemostasis. However,

these tests are not easily accessible for many dental practices. Patients should be asked if they bruise easily, if they experience problems with postprocedural bleeding after other invasive procedures, if they have a history of spontaneous nose bleeds, or if a small cut requires an extended time to coagulate. A positive response to any of these questions could indicate a problem with coagulation/healing and should prompt referral to a physician for further testing. Any invasive dental procedures should be deferred.

The liver is a particularly vulnerable organ to alcohol consumption, in large part because it is where alcohol is metabolized prior to elimination from the body. The most common manifestation among persons with alcohol use disorder is called "fatty liver." Among heavy drinkers, the incidence of fatty liver is almost universal. For some, a fatty liver may precede the onset of alcoholic cirrhosis.

The liver is the most critical organ for the metabolism of medications most commonly used in dental treatment, including analgesics, antibiotics, and local anesthetics. Amide-type local anesthetics (e.g., lidocaine, mepivacaine, prilocaine bupivacaine) are metabolized in the liver, and compromised hepatic function can cause plasma levels of local anesthetic to increase to toxic levels. As such, the lowest dose of local anesthetics should be used for these patients. Articaine is technically classified as an amide, but approximately 90% to 95% is metabolized by plasma esterases [13]. So, articaine is preferred for patients with compromised hepatic function, if appropriate.

Chronic heavy drinking appears to activate the enzyme CYP2E1, which may be responsible for transforming the over-the-counter pain reliever acetaminophen into toxic metabolites that can cause liver damage. Even when acetaminophen is taken in standard therapeutic doses, liver damage has been reported in this population [94]. A review of studies of liver damage resulting from acetaminophen-alcohol interaction reported that, in individuals with alcohol use disorder, these effects may occur with as little as 2.6 grams of acetaminophen (four to five "extra-strength" pills) taken over the course of the day by persons consuming varying amounts of alcohol [95]. The damage caused by alcohol-acetaminophen interaction is more likely to occur when acetaminophen is taken after, rather than before, the alcohol has been metabolized [94]. Moderate drinkers should also be made aware of this potential for interaction. There is now a warning label on the bottle that states, "If you consume three or more alcoholic drinks every day, ask your doctor whether you should take acetaminophen or other pain relievers/fever reducers." Further, in 2014, the FDA issued a statement that combination prescription pain relievers containing more than 325 mg acetaminophen per dosage unit should no longer be prescribed due to reported severe liver injury with acetaminophen in patients who took more than the prescribed dose in a 24-hour period; took more than one acetaminophen-containing product at the same time; or drank alcohol while taking acetaminophen products [96].

NICOTINE (TOBACCO) USE DISORDER

Nicotine dependence is considered a SUD and is the component of all tobacco products. Most commonly, nicotine is self-administered via cigarette smoking. Cigarette smoking is on the decline in the United States, but use of other tobacco products continues to increase annually . In addition to a rise in use of smokeless tobacco, people across the United States (especially youth) are using e-cigarettes (also referred to as e-cigs, vapes, e-hookahs, vape pens, and electronic nicotine delivery systems or ENDS), cigars, cigarillos (small cigars), hookahs, kreteks, pipes, and bidis (or beedis). Unfortunately, each of these products is just as dangerous (if not more so) as the use of cigarettes [101].

The rise of e-cigarettes in the past decade has introduced new variables in the prevention and treatment of nicotine addiction. Originally marketed as a smoking cessation tool, e-cigarettes are electronic products that typically deliver nicotine in the form of an aerosol [101].

Cigarette smoke is a complex mixture of more than 7,000 components, including nicotine, aromatic hydrocarbons, sterols and oxygenated isoprenoid compounds, aldehydes, nitriles, cyclic ethers, and sulfur compounds. At least 70 of these components are known to cause cancer [107].

Because nicotine can be absorbed through the oral mucosa, it does not have to be inhaled to enter the bloodstream [61]. In fact, smokeless tobacco users absorb two to three times the amount of nicotine absorbed from smoking. Smokeless tobacco is defined as tobacco products that are sucked or chewed (not burned) and includes chewing tobacco, snuff, and dissolvables. An estimated 8.6% of rural adults use smokeless tobacco, compared with 6% of urban adults [108]. Rates of smokeless tobacco use are greatest in states with large rural areas; Wyoming, West Virginia, Mississippi, and Kentucky have the highest use of smokeless tobacco [2]. Results of studies suggest that factors other than age, gender, poverty level, and region are driving urban-rural differences in tobacco use. In one study, the most likely reasons given for smokeless tobacco use were affordability, choice of flavors, ability to use in public places (as opposed to smoking), and safety to persons around the user (i.e., no secondhand smoke) [6]. As noted, while there may be a perception that these products are safer than smoked tobacco, they contain nicotine, are highly addictive, and have been linked to oral, esophageal, and pancreatic cancers [10].

Cigarettes deliver nicotine in a pulsatile manner, with plasma concentrations reaching their peak within 1.5 to 3 minutes of the commencement of smoking and gradually returning toward baseline within two to three hours [11]. Thus, nicotine levels rise and fall throughout the day with each cigarette smoked, declining to minimum amounts found in nonsmokers in the morning after the extended abstinence period of sleep. Such continuous flux in blood nicotine levels locks the user into an endless cycle of ups and downs and is thought to lead to the commonly held notion that smoking has a positive effect on mood. Considering smokers begin to experience withdrawal

symptoms within hours of their last cigarette, and because these unpleasant effects are almost completely alleviated by smoking, this perception is hardly surprising. Daily repetition of this process links these perceived positive health benefits to the act of smoking in the smoker's mind and often results in the false identification of cigarettes as an effective form of self-medication [12].

Smoking and tobacco use is associated with a variety of chronic and potentially fatal illnesses. In particular, smoking has been implicated in the development of malignant and nonmalignant lung disease, including chronic obstructive pulmonary disease, bronchitis, influenza, emphysema, pneumonia, and lung cancer. Cardiovascular disease, defined as acute myocardial infarction (MI) and stroke, is strongly related to smoking and comprises 34% of smoking-related mortality; conversely, smoking yields 16% of cardiovascular-related mortality [105].

Oral Implications

In addition to the many deleterious systemic effects of nicotine and smoking, tobacco can have serious adverse effects on oral health as well. Some are reversible and relatively mild, such as teeth staining, while others can result in serious morbidity and mortality, including oral and oropharyngeal squamous cell carcinoma.

Tobacco residue leaves a sticky film on the teeth, which causes staining but also can retain bacterial plaque and increase the risk of caries and periodontal disease. Composite restorations can also be stained by tobacco, especially if there are surface porosities and/or irregularities. Depending on the depth and extent of staining, it may be necessary to replace restorations. Smokers should be advised to adhere to strict oral hygiene practices and recall schedule.

The soft tissues of the oral cavity and throat are also affected by prolonged exposure to tobacco via smoking or chewing. Some of the most common adverse effects associated with tobacco use are gingival recession, mucosal lesions (e.g., leukoplakia), delayed healing of surgical sites, and discoloration of the dorsum of the tongue [15]. Nicotine stomatitis (a widespread palatal keratosis) is most common among heavy pipe and cigar smokers and is a chronic inflammatory response of the palatal minor salivary glands.

Of course, the most dire oral consequence of tobacco use is oral cavity squamous cell carcinoma (OCSCC). Each year, there are more than 58,450 new cases and 12,230 deaths from OCSCC or related complications [18]. Many cases of OCSCC are diagnosed at advanced stages with significant local and regional metastases, and the related surgical resection and radiation therapy necessary for advanced-stage OCSCC are associated with a high degree of morbidity and mortality. Tobacco use is the most commonly identified risk factor for the development of OCSCC, and tobacco users have a 5- to 25-fold higher risk of the development of these malignancies compared with nonusers [19]. While both smoking and chewing tobacco increase the risk for oral malignancy, the sustained direct exposure seen with smokeless tobacco use is a greater risk. This risk is increased with concurrent alcohol consumption, as alcohol desiccates the mucosal surface and allows the carcinogens in tobacco to have an extended contact time with the tissues.

The American Dental Association asserts potentially malignant disorders can be diagnosed clinically as leukoplakia, erythroplakia, erythroleukoplakia, or submucous fibrosis, and these lesions may occur among heavy tobacco and alcohol users.

(https://jada.ada.org/article/S0002-8177(17)30701-8/fulltext?dgcid=PromoSpots_EBDsite_Oralcancer. Last accessed February 19, 2024.)

Level of Evidence: Expert Opinion/Consensus Statement

Early identification of the lesions of OCSCC is essential. Dental clinicians should provide thorough oral cancer screenings on all of their patients, and lesions that have not healed within two weeks after discovery or those that are highly suspicious should be biopsied. Unfortunately, the lesions of OCSCC can present in a variety of ways—there is no characteristic or diagnostic lesion. Leukoplakic (white) lesions are more common than the erythroplakic (red) lesions, but the latter has a much higher potential for malignant transformation.

Other possible adverse oral effects of smokeless tobacco use include gingival recession, halitosis, enamel erosion, damage to the alveolar bone, and periodontal disease. There is also an increased risk for coronal and root surface dental caries, because sugar is added to smokeless tobacco products [20].

Given the extensive potentially detrimental effects of tobacco use, all healthcare professionals, including dental professionals, should counsel their patients to stop tobacco use. U.S. Public Health Service guidelines recommend that all patients be asked [20]:

- Do you smoke or chew tobacco?
- Would you like to quit?

If a patient wants to quit, draw upon the same armament of strategies used to help motivate other health behavior change, such as brushing, flossing, and attending recall appointments. In addition, tobacco cessation programs and pharmacologic agents are often effective. For patients who are not ready to quit, employ the strategies for people in the precontemplative stage of change—remain nonjudgmental and find neutral ways to raise awareness of the problem.

Nicotine replacement therapy is effective in helping people stop tobacco use. This includes patches, gum, lozenges, inhalers, and nasal spray. Bupropion was the first non-nicotine pharmacotherapy for the treatment of tobacco dependence with proven efficacy [21]. Cessation rates have been reported to improve when drug therapy combines nicotine replacement with the antidepressant bupropion [32; 35]. However, in its 2020 guideline for initiating pharmacologic treatment of tobacco-dependent adults, the American Thoracic Society (ATS) recommends varenicline over both bupropion and a nicotine patch for tobacco-dependent adults. In adults who are not ready to discontinue tobacco use, the ATS recommends beginning treatment with varenicline rather than waiting until patients are ready to stop tobacco use [21]. It is important to note that these medications have been associated with adverse effects, including an increased risk for depression and suicide [13].

Not surprisingly, tobacco cessation has high rates of relapse, and most people require multiple quit attempts to remain permanently tobacco-free. After 12 weeks of abstinence, about 43% of people return to regular use. However, longer periods of abstinence increase long-term success rates. After five years of abstinence, relapse rates drop to about 7% [43]. This presents an opportunity to help patients understand that tobacco cessation is a long-term process and previous attempts provide learning opportunities for the next attempt.

CANNABIS USE DISORDER

Cannabis products such as marijuana and hashish comprise the most widely used recreational drugs both in the United States and worldwide [44]. Although, with a few exceptions, these drugs lack the liability of abuse and dependence seen with other illicit drugs, such as cocaine, methamphetamine, and heroin, physical and psychologic withdrawal symptoms can occur with cannabis products, posing an additional consideration in the management of these patients.

There are several species of cannabis, including *Cannabis sativa*, *Cannabis indica*, and *Cannabis ruderalis*. *Cannabis* sativa is the most widely used variety and can be cultivated in a variety of climates [48; 52]. The two main derivatives of cannabis are marijuana and hashish. The term marijuana originated in Mexico to describe cheap tobacco; today, it refers to the dried leaves and flowers of the *Cannabis* plant. Hashish, an Arabic term, is the viscous resin of the plant [48; 52].

Cannabis contains more than 480 known chemicals, more than 100 of which are grouped under the category of cannabinoids [48; 53]. The primary psychoactive ingredient is delta-9-tetrahydrocannabinol (delta-9-THC), which accounts for up to 25% of the total dry weight of high-potency strains [59]. Other cannabinoids, including delta-8-THC, cannabinol, cannabicyclol, cannabichromene, and cannabigerol, are present in small quantities (typically less than 5% dry weight) and have no significant psychotropic effects compared to THC. It is unknown whether these compounds may have an impact on the overall effect of cannabis [48]. One notable exception is cannabidiol (CBD), which in some cannabis strains can account for up to 5% dry weight and has demonstrated therapeutic efficacy for psychosis, anxiety, and other disorders [59; 81; 92].

Cannabis use disorder is best described as a chronic relapsing disease characterized by compulsive seeking and use of cannabis, accompanied by functional and molecular changes to the brain [5]. The single most defining aspect of cannabis use disorder is the salience of the relationship with the drug. The stronger the relationship, the more likely the patient will continue problematic use despite internal and external consequences.

As with many drugs, cannabis can enhance or attenuate the effects of other medications. A combination of dronabinol (a cannabinoid) and prochlorperazine is more effective in reducing chemotherapy-associated nausea and vomiting than prochlorperazine alone [97]. Cannabis can also augment the sedating effects of other psychotropic substances, such as alcohol and benzodiazepines. A number of synergistic effects may be therapeutically desirable, such as the enhancement of:

- Muscle relaxants, bronchodilators, and antiglaucoma medication
- Opioid analgesia
- Phenothiazines' antiemetic effect
- Benzodiazepines' antiepileptic action

The cyclooxygenase inhibitors, indomethacin, acetylsalicylic acid, and other NSAIDs antagonize THC effects, reflecting the involvement of cyclooxygenase activity in several THC effects [98].

Cannabis should not be considered as a safe alternative to tobacco products, as it contains many of the same carcinogens as tobacco products [100]. There is some evidence that frequent and/or heavy cannabis use may promote oral cancer development [104]. While there are no oral manifestations specific to prolonged cannabis use, smoking and/or chewing cannabis can cause an alteration in the oral epithelium known as cannabis stomatitis, which is characterized by chronic inflammation of the oral mucosa with hyperkeratosis and leukoplakia. Compared with the general population, chronic cannabis smokers have poorer oral health, more decayed teeth, more plaque accumulation, and poorer gingival health [102].

Aside from the direct effects of cannabis on the oral tissues, the appetite stimulant effects of THC can result in the consumption of cariogenic snack foods. The caries pattern among these patients typically involves the smooth outer or inner surfaces of the teeth [103].

Some habitual cannabis users experience a decrease in salivary flow and in the pH of the oral environment [106]. As discussed, xerostomia has a variety of adverse oral effects that should be addressed, if present.

COCAINE USE DISORDER

Stimulant drugs are substances that activate the central nervous system (CNS) and peripheral nervous system. There are two main categories of commonly used illicit stimulants: cocaine and amphetamine and its derivatives and analogs, such as methamphetamine. Cocaine, a tropane alkaloid, is extracted from the leaves of *Erythroxylumcoca* bush, which contain 0.6% to 1.8% of the alkaloid [109; 110].

Cocaine's specific mechanism of action involves increasing the synaptic transmission of dopamine, serotonin, and norepinephrine by interaction with plasma membrane transporters to block presynaptic reuptake. Action involving the dopamine transporter is the most important in producing the reinforcing effects, which lead to dependence [109; 110].

Cocaine can be absorbed through any mucous membrane. Different routes of cocaine delivery into the body produce different patterns and levels of blood cocaine concentration. Intranasally administered (snorted) cocaine is absorbed and distributed into the body gradually, while the onset of effect is rapid when smoked or injected. The effect of cocaine is experienced most rapidly and intensely when smoked, with an onset of effects typically occurring within 8 to 10 seconds; thus, cocaine is most addictive when smoked. Injected cocaine takes twice as long to enter the brain (i.e., 16 to 20 seconds), and snorted cocaine begins to act in three to five minutes. The lungs are the most rapid and efficient cocaine delivery modality because of the large surface area of absorption and rapidity of arterial circulation to the brain [109; 110; 111].

Peak plasma levels of cocaine occur 20 to 40 minutes following intranasal ingestion, with a typical concentration of 100–500 mcg/L. Toxicity is rarely seen at this dose level. Plasma half-life ranges from 31 to 82 minutes, with a mean of 38 minutes [109; 111].

Subjective and behavioral effects from single- and multiple-dose acute ingestion of cocaine include euphoria, increased heart rate, restlessness, anxiety and panic, delusions, heightened alertness, and insomnia. Over time, chronic users may develop dysphoria, anxiety, restlessness, and paranoia. The risk of toxicity/overdose increases with continued use as well. Withdrawal from cocaine can also have a blend of physical and behavioral symptoms, including fatigue, decreased ability to concentrate, depression, anxiety, cravings, generalized body aches, chills, and tremors [111].

Patients are unlikely to volunteer use of cocaine during a dental appointment. However, if any common signs or symptoms of cocaine use or cocaine withdrawal are observed, clinicians should have an open, nonjudgmental discussion focusing on the patient's well-being. If appropriate, referral information should be provided.

In patients who may be taking cocaine, local anesthetics with a vasoconstrictor (e.g., 1:100,000 epinephrine) should be avoided. Concurrent use within 24 hours of last cocaine dose potentiates the stimulant effects and can lead to a hypertensive crisis, cerebrovascular accident (stroke), or myocardial infarction (heart attack) [61].

Snorting cocaine can lead to necrosis and perforation of the nasal septum and palate; surgical repair of these defects can be very challenging [112]. Possible oral effects of cocaine use include decay, erosion, gingival recession, decreased salivary pH, periodontal disease, and ulcerated and erythematous gingival tissues from intraoral cocaine deposition [113]. Oral and maxillofacial symptoms of cocaine abuse include xerostomia, bruxism, and temporomandibular joint pain [114].

METHAMPHETAMINE USE DISORDER

Like cocaine, methamphetamine is a CNS stimulant and induces temporary improvements in mental acuity and physical function. The widespread use of methamphetamine stems largely from its potential to produce euphoria, reduce fatigue, enhance performance, suppress appetite, and induce weight loss, coupled with multiple interacting social, biologic, cultural, and psychologic factors. Unlike cocaine and heroin, which are plant-derived and whose synthesis is complex, methamphetamine is easily prepared from simple chemical precursors [110; 116].

Methamphetamine stimulates the release and blocks the presynaptic reuptake of serotonin, dopamine, and norepinephrine. It is metabolized at a much slower rate than some other stimulants, such as cocaine. Methamphetamine is primarily available as [110; 115; 116]:

- "Speed," a low-grade, locally manufactured powder that is snorted or injected
- Pills that are often combined with other drugs, such as ketamine
- "Base" or "paste," an often locally manufactured, glue-like substance
- "Crystal meth" and "ice," which are highly pure, crystalline forms that are smoked or injected

In addition to euphoria, hyperactivity, and energy, other acute effects of methamphetamine use can include increased confidence and self-esteem, grandiosity, feeling of well-being, heightened attentiveness, elevated body temperature, profuse sweating, restlessness, tremors, aggressive behavior, and uncontrollable jaw clenching. Chronic effects can include paranoia, insomnia, psychotic or violent behavior, pronounced fatigue, poor coping abilities, sexual dysfunction, and dermatologic conditions.

According to the Department of Veterans Affairs, there is insufficient evidence to recommend for or against the use of any pharmacotherapy for the treatment of methamphetamine use disorder.

(https://www.healthquality.va.gov/guidelines/MH/sud/VADoDSUDCPG.pdf. Last accessed February 19, 2024.)

Level of Evidence: Expert Opinion/Consensus Statement

"Meth mouth" is widespread among certain populations of methamphetamine users, particularly those incarcerated for methamphetamine-related offenses. "Meth mouth" (dental deterioration) is a constellation of signs and symptoms associated with chronic use of methamphetamine and is caused by methamphetamine-induced vasoconstriction and reduced salivary flow, methamphetamine-induced vomiting, jaw clenching, the high intake of sugary beverages often seen with methamphetamine users, and abandonment of oral hygiene. This condition is characterized by widespread tooth decay and tooth loss, advanced tooth wear and fracture, and oral soft tissue inflammation and breakdown [117].

The American Dental Association recommends that practitioners be particularly aware of the following signs, which may indicate that dental deterioration is linked to methamphetamine use [117]:

- Unaccounted for and accelerated decay in adolescents and young adults
- Distinctive pattern of decay on the buccal smooth surface of the teeth and the interproximal surfaces of the anterior teeth
- Malnourished appearance of heavy users

The acute effects of methamphetamine can include irritability, agitation, hypervigilance, and possibly violent outbursts, and chronic use of methamphetamine has a greater association with violent behavior than any other psychoactive drug. Users of methamphetamine are also at high risk for being recipients of violence [115]. As such, they may present with dental or oral trauma, the healing of which can be complicated by the oral effects of the drug. As always, dental clinicians and staff should take steps to ensure their own safety and the safety of all of their patients, and protocols should be in place to manage patients who appear agitated or disturbed.

CONCLUSION

The human mind is complex, and there are many forms of mental illness that affect millions of people in the United States and throughout the world. While strides have been made awareness and treatment of mental illness, stigma and lack of social acceptance remain. Aside from the fact that these conditions are medical illnesses that should be considered in any patient, they can also have systemic and oral effects that specifically impact the provision of dental care. As such, it is incumbent to include discussion and documentation of patients' mental illness and related pharmacotherapy as a part of their medical history.

If serious mental illness is present, the patient's physician and/or psychiatrist should be consulted. A collaborative effort by the entire interprofessional team in the treatment of patients with mental illness ensure that patients are able to maintain optimal oral health and a high quality of life.

Customer Information/Answer Sheet/Evaluation insert located between pages 36–37.

COURSE TEST - #56741 DENTAL TREATMENT OF PATIENTS WITH MENTAL DISORDERS

This is an open book test. Please record your responses on the Answer Sheet.
A passing grade of at least 70% must be achieved in order to receive credit for this course.

This 8 CE Credit Hour activity must be completed by February 28, 2027.

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This course meets the Dental Board of California's requirements for 8 units of continuing education.
Dental Board of California course #08-3841-00413.

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1. Which of the following questions regarding bipolar disorder is TRUE?
- A) *Bipolar disorder is not the same as manic depression.*
- B) *Significantly more men than women are diagnosed with bipolar disorder.*
- C) *Bipolar I disorder is associated with more severe manic episodes than bipolar II disorder.*
- D) *Bipolar disorder is more common than major depressive disorder or anxiety disorders.*

2. Which of the following is a component of bipolar disorder treatment plans?
- A) *Psychotherapy*
- B) *Pharmacotherapy*
- C) *Lifestyle modification*
- D) *All of the above*

3. The DSM-5-TR diagnostic criteria for MDD also include several specifiers to further describe the nature of the current episode. Which of the following is NOT one such specifier?
- A) *Bipolar features*
- B) *Anxious distress*
- C) *Seasonal pattern*
- D) *Melancholic features*

4. Which of the following is a sign of mild serotonin syndrome?
- A) *Diaphoresis*
- B) *Hyperthermia*
- C) *Hypertension*
- D) *Hyper-reflexia*

5. Generalized anxiety disorder is characterized by
- A) *recurrent unexpected panic attacks.*
- B) *the excessive or unreasonable fear of (and restricted to) animals, objects, or specific situations.*
- C) *excessive and inappropriate worrying that is persistent and not restricted to particular circumstances.*
- D) *markedly diminished interest or pleasure in all or almost all activities most of the day or nearly every day.*

6. The adverse interactions between diazepam and opioids can occur for approximately how long after the last dose of diazepam is taken?
- A) *12 hours*
- B) *Two days*
- C) *Four days*
- D) *One week*

7. What is the most common type of anxiety disorder?
- A) *Panic disorder*
- B) *Specific phobia*
- C) *Generalized anxiety disorder*
- D) *Obsessive-compulsive disorder*

8. For blood-injection-injury phobias, an effective approach is combining exposure therapy with
- A) *music therapy.*
- B) *pharmacotherapy.*
- C) *eye movement desensitization and reprocessing therapy.*
- D) *muscle tension exercises designed to prevent fainting.*

9. Which of the following is a common symptom of PTSD?
- A) *Hypervigilance*
- B) *Intrusive thoughts*
- C) *Nightmares and flashbacks of traumatic events*
- D) *All of the above*

10. The concurrent use of paroxetine (an SSRI used in the treatment of PTSD) and NSAIDs (e.g., ibuprofen, naproxen) can
- A) *induce suicidal ideation.*
- B) *decrease platelet aggregation.*
- C) *result in nausea and vomiting.*
- D) *increase the risk for respiratory depression.*

11. Which of the following is a positive symptom of schizophrenia?
- A) *Anhedonia*
- B) *Auditory hallucinations*
- C) *Poor executive functioning*
- D) *Difficulty initiating and sustaining activities*

12. Typical antipsychotics can cause tardive dyskinesia, a condition characterized by
- A) *anhedonia.*
- B) *xerostomia and dry eyes.*
- C) *involuntary muscle movements.*
- D) *hypertension and hyperthermia.*

13. Which of the following is an oral manifestation of pain disorder?
- A) *Oral dysesthesia*
- B) *Periodontal disease*
- C) *Linear gingival erythema*
- D) *Necrotizing ulcerative stomatitis*

14. Hypochondriasis is a(n)
- A) *mood disorder.*
- B) *anxiety disorder.*
- C) *somatic disorder.*
- D) *stress-related disorder.*

15. All of the following are classes of drugs that may be associated with a substance use disorder (SUD) according to the DSM-5-TR, EXCEPT:
- A) *Opioids*
- B) *Alcohol*
- C) *Cannabis*
- D) *Depressants*

16. Tolerance refers to
- A) *physical dependence.*
- B) *psychologic dependence.*
- C) *impaired control over drug use.*
- D) *the diminishing effect of a substance over time.*

17. Morphine and most other opioid agonists share all of the following physiologic effects, EXCEPT:
- A) *Analgesia*
- B) *Alteration of respiration*
- C) *Changes in mood and reward behavior*
- D) *Enhancement of neuroendocrine function*

18. Which of the following is NOT a family of classical opioid peptides?
- A) *Morphine*
- B) *Endorphins*
- C) *Dynorphins*
- D) *Enkephalins*

19. Which of the following statements regarding NSAIDs and opioids for dental pain is TRUE?
- A) *NSAIDs act centrally while opioids act locally.*
- B) *Opioids are considered first-line therapy for most dental pain.*
- C) *NSAIDs with or without adjunctive acetaminophen provide equivalent or superior dental pain relief than opioids.*
- D) *Dental pain after oral or periodontal surgery is caused by the release of prostaglandins from injured tissues, a pain best managed with opioids.*

20. Patients with opioid use disorder are more prone to
- A) *caries.*
- B) *xerostomia.*
- C) *periodontal disease.*
- D) *All of the above*

Test questions continue on next page →

21. The ideal anxiolytic medication for dental appointments is

A) *triazolam.*
B) *diazepam.*
C) *clonazepam.*
D) *chlordiazepoxide.*

22. Alcohol abuse is a risk factor for all of the following opportunistic oral infections, EXCEPT:

A) *Candidiasis*
B) *Kaposi sarcoma*
C) *Angular cheilitis*
D) *Recurrent herpes labialis*

23. Which of the following statements regarding oral lesions associated with tobacco use is TRUE?

A) *Leukoplakic lesions have a higher potential for malignant transformation.*
B) *Pearly lesions are diagnostic of oral cavity squamous cell carcinoma (OCSCC).*
C) *Leukoplakic (white) lesions are less common than erythroplakic (red) lesions.*
D) *Oral lesions that have not healed within two weeks after discovery or those that are highly suspicious should be biopsied.*

24. In patients who may be taking cocaine,

A) *dental treatment should never be attempted.*
B) *referral to drug treatment is not recommended.*
C) *local anesthetics with a vasoconstrictor should be avoided.*
D) *clinicians should not discuss cocaine use in order to avoid confrontation.*

25. "Meth mouth" is related to

A) *increased salivary flow.*
B) *methamphetamine-induced vomiting.*
C) *methamphetamine-induced vasodilatation.*
D) *excessive and repetitive oral hygiene activities.*

Be sure to transfer your answers to the Answer Sheet located on the envelope insert located between pages 36–37.
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ORAL AND MAXILLOFACIAL TRAUMA
#50003 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide dental professionals with a deeper understanding of and appreciation for oral and maxillofacial trauma.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for all dental professionals, especially those who work in emergency and trauma care.
AGD Subject Code: 070

OSHA AND HEALTHCARE FACILITIES
#51234 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide information that will allow facilities to more easily comply with the broad spectrum of rules covered by the OSHA regulations.
Faculty: Carol Shenold, RN, ICP
Audience: This course is designed for dental healthcare staff in all specialties.
AGD Subject Code: 550

CONTROVERSIAL ISSUES IN DENTISTRY
#51391 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide factual information about controversial topics in dentistry, allowing professionals to objectively assess the issues and discuss them with patients and other professionals.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for dental professionals in all practice settings.
AGD Subject Code: 750

SMOKING AND SECONDHAND SMOKE
#51784 • 10 CE Credit Hours • $90

Purpose: The purpose of this course is to provide dental professionals with a formal educational opportunity that will address the impact of tobacco smoking and secondhand exposure in public health and disease as well as interventions to promote smoking cessation among their patients.
Faculty: Mark S. Gold, MD, DFASAM, DLFAPA
Audience: This course is designed for dental professionals who may intervene to stop patients from smoking.
AGD Subject Code: 158

DENTAL CARE FOR PATIENTS WITH DISABILITIES
#51913 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to focus awareness upon the difficult oral health issues that patients with disabilities face on a daily basis and to provide dental professionals with the necessary information to improve patients' oral and systemic health.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for dental professionals involved in assessing and promoting optimum oral care for special needs patients.
AGD Subject Code: 750

DENTAL TREATMENT OF PEDIATRIC AND ADOLESCENT PATIENTS
#52163 • 6 CE Credit Hours • $54

Purpose: Dental professionals are frequently involved in the care of pediatric and/or adolescent patients. The purpose of this course is to outline the oral health needs and problems unique to the pediatric and adolescent populations.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for dental hygienists and assistants whose patient populations include children and/or adolescents. It may also be of interest to dentists with pediatric patients.
AGD Subject Code: 430

ORAL HEALTH ISSUES DURING PREGNANCY
#53074 • 2 CE Credit Hours • $18

Purpose: The purpose of this course is to provide dental professionals with the information necessary to appropriately intervene to promote good oral health in pregnant patients, with lasting positive effects to the patient and fetus.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for all dental professionals involved in the care of pregnant patients.
AGD Subject Code: 750

ANTIBIOTICS REVIEW
#55074 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide a review of the major classes of antibiotics and their characteristics as well as an overview of selected individual agents within each class that are most useful for today's clinical practitioner.
Faculty: Donna Coffman, MD
Audience: This course is designed for dental providers who prescribe and administer antibiotics to patients.
AGD Subject Code: 148

MEDICAL MARIJUANA AND OTHER CANNABINOIDS
#55173 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide dental professionals with unbiased and evidence-based information regarding the use of marijuana and other cannabinoids for the treatment of medical conditions.
Faculty: Mark Rose, BS, MA, LP
Audience: This course is designed for dental professionals involved in the care of patients who use or who are candidates for the therapeutic use of marijuana and other cannabinoids.
AGD Subject Code: 149

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Course Availability List *(Cont'd)*

LOCAL ANESTHETICS IN DENTISTRY
#55182 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide dental professionals with a comparative perspective on the use of local anesthetics.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for all dental professionals whose patients may be administered local anesthetics.
AGD Subject Code: 340

COCAINE USE DISORDER
#56944 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide a current, evidence-based overview of cocaine abuse and dependence and its treatment, in order to allow dental professionals to more effectively identify, treat or refer cocaine-abusing patients.
Faculty: Mark Rose, BS, MA, LP
Audience: This course is designed for dental professionals who are involved in the evaluation or treatment of persons who use cocaine.
AGD Subject Code: 157

METHAMPHETAMINE USE DISORDER
#56954 • 5 CE Credit Hours • $45

Purpose: Methamphetamine use has risen alarmingly, reaching epidemic proportions in some regions. The purpose of this course is to provide a current, evidence-based overview of methamphetamine abuse and dependence and its treatment in order to allow dental professionals to more effectively identify, treat, or refer methamphetamine-abusing patients.
Faculty: Mark Rose, BS, MA, LP
Audience: This course is designed for dental professionals who are involved in the evaluation or treatment of persons who use methamphetamine.
AGD Subject Code: 157

SEXUAL HARASSMENT PREVENTION: THE CALIFORNIA LAW
#57481 • 2 CE Credit Hours • $18

Purpose: The purpose of this course is to provide information on what constitutes sexual harassment, how to prevent it in the workplace, and to define the roles and responsibilities of creating a safe work environment as it applies to both supervisors and employees.
Faculty: Lauren E. Evans, MSW
Audience: This course is designed for dental professionals who may act to prevent sexual harassment.
AGD Subject Code: 550

TOP-SELLING HERBAL SUPPLEMENTS
#58080 • 3 CE Credit Hours • $27

Purpose: The purpose of this course is to provide dental professionals in all practice settings the knowledge necessary to increase their understanding of the most popular herbal supplements and to better counsel patients regarding their use.
Faculty: Chelsey McIntyre, PharmD
Audience: This course is designed for dental professionals whose patients are taking or are interested in taking herbal supplements.
AGD Subject Code: 149

ORAL PATHOLOGY REVIEW
#58664 • 5 CE Credit Hours • $45

Purpose: The purpose of this course is to provide dental professionals with the information necessary to identify, assess, and treat or refer patients with a wide range of conditions of the hard and soft tissues of the oral and maxillofacial complex resulting from pathologic entities of microbial, autoimmune, and behavioral origin.
Faculty: Mark J. Szarejko, DDS, FAGD
Audience: This course is designed for all dental professionals who care for patients who may have oral pathology.
AGD Subject Code: 730

SLEEP DISORDERS
#58884 • 10 CE Credit Hours • $90

Purpose: Many of the complications associated with sleep disorders are preventable, making early diagnosis and appropriate treatment vital. The purpose of this course is to provide dental professionals with the information necessary to identify and contribute to the treatment of sleep disorders, thereby improving patients' quality of life and preventing possible complications.
Faculty: Teisha Phillips, RN, BSN
Audience: This course is designed for all dental professionals who are involved in the care of patients experiencing a sleep-related disorder.
AGD Subject Code: 730

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- Use pen or pencil; please refrain from using markers.
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#51294 THE CALIFORNIA DENTAL PRACTICE ACT—2 CE CREDIT HOURS

Please refer to page 27.

Expiration Date: 01/31/28 *May be taken individually for $18*

	A	B	C	D		A	B	C	D
1.	❍	❍	❍	❍	6.	❍	❍	❍	❍
2.	❍	❍	❍	❍	7.	❍	❍	❍	❍
3.	❍	❍	❍	❍	8.	❍	❍	❍	❍
4.	❍	❍	❍	❍	9.	❍	❍	❍	❍
5.	❍	❍	❍	❍	10.	❍	❍	❍	❍

#58584 INFECTION CONTROL FOR DENTAL PROFESSIONALS: THE CA REQ.—2 CE CREDIT HOURS

Please refer to pages 45.

Expiration Date: 01/31/28 *May be taken individually for $18*

	A	B	C	D		A	B	C	D
1.	❍	❍	❍	❍	6.	❍	❍	❍	❍
2.	❍	❍	❍	❍	7.	❍	❍	❍	❍
3.	❍	❍	❍	❍	8.	❍	❍	❍	❍
4.	❍	❍	❍	❍	9.	❍	❍	❍	❍
5.	❍	❍	❍	❍	10.	❍	❍	❍	❍

#56741 DENTAL TREATMENT OF PATIENTS WITH MENTAL DISORDERS—8 CE CREDIT HOURS

Please refer to pages 68–70.

Expiration Date: 02/28/27 *May be taken individually for $72*

	A	B	C	D		A	B	C	D		A	B	C	D
1.	❍	❍	❍	❍	11.	❍	❍	❍	❍	21.	❍	❍	❍	❍
2.	❍	❍	❍	❍	12.	❍	❍	❍	❍	22.	❍	❍	❍	❍
3.	❍	❍	❍	❍	13.	❍	❍	❍	❍	23.	❍	❍	❍	❍
4.	❍	❍	❍	❍	14.	❍	❍	❍	❍	24.	❍	❍	❍	❍
5.	❍	❍	❍	❍	15.	❍	❍	❍	❍	25.	❍	❍	❍	❍
6.	❍	❍	❍	❍	16.	❍	❍	❍	❍					
7.	❍	❍	❍	❍	17.	❍	❍	❍	❍					
8.	❍	❍	❍	❍	18.	❍	❍	❍	❍					
9.	❍	❍	❍	❍	19.	❍	❍	❍	❍					
10.	❍	❍	❍	❍	20.	❍	❍	❍	❍					

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4. ☐ Yes ☐ No
5. ☐ Yes ☐ No
6. ☐ Yes ☐ No
7. ☐ Yes ☐ No
8. ☐ Yes ☐ No
9. ☐ Yes ☐ No
10. ☒ N/A
11. ☐ Yes ☐ No
12. ☐ Yes ☐ No

#58584
2 CE Credit Hrs

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2. _____ Hours
3. ☐ Yes ☐ No
4. ☐ Yes ☐ No
5. ☐ Yes ☐ No
6. ☐ Yes ☐ No
7. ☐ Yes ☐ No
8. ☐ Yes ☐ No
9. ☐ Yes ☐ No
10. ☒ N/A
11. ☐ Yes ☐ No
12. ☐ Yes ☐ No

#56741
8 CE Credit Hrs

1. ☐ New ☐ Review
2. _____ Hours
3. ☐ Yes ☐ No
4. ☐ Yes ☐ No
5. ☐ Yes ☐ No
6. ☐ Yes ☐ No
7. ☐ Yes ☐ No
8. ☐ Yes ☐ No
9. ☐ Yes ☐ No
10. ☐ Yes ☐ No
11. ☐ Yes ☐ No
12. ☐ Yes ☐ No

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