BACKGROUND INFORMATION AND OVERVIEW OF THE CURRENT REGULATORY PROGRAM

Submitted to the Legislature December 28, 2023

VOLUME 2

DENTAL BOARD OF CALIFORNIA (BOARD)
BACKGROUND INFORMATION AND OVERVIEW OF THE CURRENT REGULATORY PROGRAM
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ATTACHMENT A

Board, Council, and Committee Member Administrative Policy and Procedure Manual

Dental Board of California
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CHAPTER 1. INTRODUCTION

Overview

The Dental Board of California (Board) was created by the California State Legislature in 1885. Today, the Board is one of the boards, bureaus, commissions, and committees within the Department of Consumer Affairs (DCA), Business, Consumer Services, and Housing Agency. The Board's highest priority is protection of the public while exercising its licensing, regulatory, and disciplinary functions. If protection of the public is inconsistent with other interests sought to be promoted, the protection of the public shall be paramount.

The Board is presently comprised of 15 members. The composition of the Board is defined in Business and Professions Code (BPC) sections 1601, 1602, and 1603 and includes: eight dentists appointed by the Governor, only one can be a member of a faculty of any California dental college, and one must be a dentist practicing in a nonprofit community clinic; five public members, three appointed by the Governor, one by the Speaker of the Assembly and one by the Senate Rules Committee; one registered dental hygienist appointed by the Governor; and one registered dental assistant appointed by the Governor. Board members may serve up to two full four-year terms. In addition to the two full four-year terms, Board members may serve the partial term of the vacant position to which they are appointed and up to a one-year grace period after a term expires. Board members serve without a salary, but are compensated $100 per day for each meeting day and are reimbursed for travel expenses (BPC § 103).

This policy and procedure manual is provided to Board, Council, and Committee members as a reference for important laws, regulations, DCA policies, and Board policies to help guide the actions of the Board, Council, and Committee members and ensure Board, Council, and Committee effectiveness and efficiency.

Definitions

BPC	Business and Professions Code
CCR	California Code of Regulations
CLEAR	Council on Licensure Enforcement and Regulations
COUNCIL	Dental Assisting Council
DCA	Department of Consumer Affairs
SAM	State Administrative Manual
President	Where the term "President" is used in this manual, it will be assumed to include "his or her designee"

General Rules of Conduct

Board members shall not speak or act for the Board without proper authorization**.**

Board members shall maintain the confidentiality of confidential documents and information.

Board members shall commit the time necessary to prepare for Board responsibilities.

Each Board member shall recognize the equal role and responsibilities of all Board members.

Board members shall act fairly, be nonpartisan, impartial, and unbiased in their role of protecting the public.

Board members shall treat all applicants and licensees in a fair and impartial manner.

Board members' actions shall serve to uphold the principle that the Board's primary mission is to protect the public.

Board members shall not use their positions on the Board for personal, familial, or financial gain.

Board members shall refrain from working on personal and/or non-Board related business during Board meetings. If necessary, members shall leave the dais***, being mindful of a quorum, to address personal and/or non-Board related business***.

CHAPTER 2. BOARD, COUNCIL, AND COMMITTEE MEETING PROCEDURES

Frequency of Meetings

Boards shall meet at least two times each calendar year. (BPC § 101.7.) Boards shall meet at least once each calendar year in Northern California and once each calendar year in Southern California in order to facilitate participation by the public and its licensees. (*Ibid.*)

Special meetings may be held at such times as the Board may elect, or on the call of the Board President, or of not less than four members thereof. (BPC § 1608.)

Notice of each meeting and the time and place thereof shall be given in accordance with the Bagley-Keene Open Meeting Act. (Gov. Code § 11120 et seq.)

Board, Council, and Committee Member Attendance at Meetings

(Board Policy)

Members shall attend each meeting. If a member is unable to attend, he or she must contact the Board President or the Executive Officer and request to be excused from the meeting.

Board, Council, and Committee Meetings

(Government Code Section 11120 et seq.)

Meetings are subject to all provisions of the Bagley-Keene Open Meeting Act. This act governs meetings of the state regulatory boards and meetings of committees of those boards where the committee consists of more than two members. It specifies meeting notice and agenda requirements and prohibits discussing or taking action on matters not included in the agenda.

Communications

(Government Code Section 11122.5(b))

A majority of the members of the Board, a committee or Council shall not, outside of a publicly noticed meeting, use a series of communications of any kind, directly or through intermediaries, to discuss, deliberate, or take action on any item of business that is within the subject matter of the state body.

Council Member Participation at Board Meeting

Government Code Section 11122.5(c)(4); 81 Ops.Cal.Atty.Gen. 156, 158 (1998); DCA Policy)

Council members not serving as a member of the Board may only attend a Board meeting as an observer and shall not participate, which includes sitting with the Board on the dais or making any statements or asking any questions during the Board meeting, in matters under consideration by the Board during a meeting, unless there is a joint meeting of the Board and Council.

Committees

(Board Policy, BPC Section 1601.1)

The Board shall be organized into standing committees pertaining to examinations, enforcement, and other subjects the Board deems appropriate.

Committees meet when they have issues to be considered in order to make recommendations to the full Board.

The Board President and/or Committee Chair, in consultation with the Executive Officer, may appoint a two-person subcommittee at any time as deemed necessary.

The statutory and standing committees are as follows:

- Diversion Evaluation Committees (Northern and Southern) (BPC § 1695.2)
- Elective Facial Cosmetic Surgery Permit Credentialing Committee (BPC § 1638.1)
- Enforcement Committee (BPC § 1601.1)
- Examination Committee (BPC § 1601.1)

The specific needs committees are as follows:

- Access to Care Committee
- Anesthesia Committee
- Executive Committee
- Legislative and Regulatory Committee
- Licensing, Certification, and Permits Committee
- Substance Use Awareness Committee

Dental Assisting Council

(BPC Section 1742)

The Council will consider all matters relating to dental assistants in California and will make appropriate recommendations to the Board and the standing Committees of the Board. The members of the Council shall include the registered dental assistant member of the Board, another member of the Board, and five registered dental assistants.

Public Participation

(Government Code Section 11125.7(a); Board Policy)

The Board, Council, and committees shall provide an opportunity for members of the public to directly address the Board, Council, or Committee on each agenda item before or during the Board's, Council's, or Committee's discussion or consideration of the item. Public participation is encouraged throughout the public portion of the meetings. The chairs of the respective committees, as well as the Board President, acknowledge comments from the audience during general discussion of agenda items. In addition, each Board agenda includes public comment as a standing item of the agenda. This standing agenda item allows the public to request items to be placed on future agendas.

If the agenda contains matters that are appropriate for closed session, the agenda shall cite the particular statutory section and subdivision authorizing the closed session.

Quorum

(BPC Section 1610)

Eight Board members constitute a quorum of the Board for the transaction of business; four members for the council; four members for the Diversion Evaluation Committee (DAC); and three members for the Elective Facial Cosmetic Surgery Permit Credentialing Committee (EFCS). Ad Hoc committee quorums would be a simple majority of appointed members.

- ***Members shall be mindful of the quorum before temporarily exiting the discussion.***

Agenda Items

(Board Policy)

Board meetings generally involve:

- Board policy
- Legislation that may be relevant to the practice of dentistry
- Content and administration of examinations
- Adoption or repeal of regulations
- Approval of fee schedules
- Appeals of Board actions
- Board Procedures/Operations
- Enforcement issues, such as adoption or non-adoption of Administrative Law Judge proposed decisions, stipulated settlements, and referral of cases to the Office of Administrative Hearings
- Committee meetings
- Consideration of committee recommendations

Any Board member may submit, for consideration, items for a Board meeting agenda to the Board President and Executive Officer 30 days prior to the meeting. The Board President and Executive Officer, in consultation with legal counsel, will review and, if appropriate, approve items submitted for consideration.

Closed Session

(Government Code Section~~s~~ 11126(c)(2) and (3))

The Board shall meet in Closed Session to deliberate and take action on disciplinary matters, litigation, and personnel matters.

- Stipulations and Proposed Decisions will be distributed to Board members for a mail vote.
- Two Board members are required to hold a decision for discussion in Closed Session at a future Board meeting. If only two members hold for discussion and one of those members is unable to attend the meeting, the Board's action will revert to the majority vote on that decision.
- Effective July 1, 2016, Stipulated Surrenders and Revocations are automatically accepted by the Executive Officer without Board member vote per CCR, title 16, section 1001.

Notice of Meetings

(Government Code Section 11125.)

Meeting notices must include the agenda and shall be sent to persons on the Board's mailing list at least 10 calendar days in advance. The notice shall include a staff person's name, work address and work telephone number who can provide further information prior to the meeting.

Notice of Meetings to be Posted on the Internet

(Government Code Section 11125)

The notice of meeting and agenda shall be made available on the Internet at least 10 days in advance of the meeting, and shall include the name, address, and telephone number of any person who can provide further information prior to the meeting, but need not include a list of witnesses expected to appear at the meeting. The written notice shall additionally include the address of the Internet site where notices are available.

Record of Meetings

(Board Policy)

The minutes are a summary, not a transcript, of each Board, Council and Committee meeting. They shall be prepared by Board staff and submitted for review by the Board members at the next Board meeting. Board minutes shall be approved at the next scheduled meeting of the Board. When approved, the minutes shall serve as the official record of the meeting.

Board meetings are webcast in real time when webcasting resources are available. Archived copies of the webcast are available on the Board's website approximately 30 days after the meeting is held.

Recording

(Board Policy; Government Code Section 11124.1(b))

Public meetings are recorded for staff purposes. Recordings may be erased upon Board approval of the minutes or 30 days after the recording. CD copies are available, upon request, for Board members not able to attend a meeting.

Meeting Rules

(CCR, Title 16, Section 1002)

Board, Council, and Committee meetings are conducted following Robert's Rules of Order, to the extent that it does not conflict with state law (e.g., Bagley-Keene Open Meeting Act), as a guide when conducting the meetings.

Use of Electronic Devices During Meetings

(Government Code Section 11122.5(b)(1); 84 Ops.Cal.Atty.Gen. 30 (2001))

Board members should not text or email one another during a meeting on any matter within the Board's jurisdiction. Using electronic devices to communicate secretly in such a manner would violate the Open Meeting Act. Where laptop computers or tablets are used by the Board members at the meeting because the Board provides materials electronically, the Board President shall make an announcement at the beginning of the meeting as to the reason for the use of laptop computers or tablets.

CHAPTER 3. TRAVEL AND COMPENSATION POLICIES AND PROCEDURES

Travel Approval

(DCA Memorandum 96-01)

Board, Council, and Committee members shall have Board President approval for all travel except for regularly scheduled Board, Council, and Committee meetings to which the member is assigned.

Travel Arrangements

(Board Policy)

Board, Council, and Committee members are encouraged to coordinate with the Administrative Analyst on travel arrangements and lodging accommodations.

Out-of-State Travel

(SAM Section 700 et seq.)

For out-of-state travel, Board members will be reimbursed for actual lodging expenses, supported by vouchers, and will be reimbursed for meal and supplemental expenses. Out-of-state travel for all persons representing the State of California is controlled and must be approved by the Governor's Office.

Travel Claims

(SAM Section 700 et seq. and DCA Memorandum 96-01)

Rules governing reimbursement of travel expenses for Board members are consistent with rules that apply to management-level state staff. All expenses shall be claimed on the appropriate travel expense claim forms. The Administrative Analyst maintains these forms and completes them as needed. It is advisable for Board members to submit their travel expense forms immediately after returning from a trip and not later than two weeks following the trip.

In order for the expenses to be reimbursed, Board members shall follow the procedures contained in DCA Departmental Memoranda that are periodically disseminated by the DCA Director and are provided to Board members.

Per Diem Compensation

(BPC Section 103)

Board, Council, and Committee members will receive per diem compensation for each day actually spent in the discharge of official duties, and shall be reimbursed for traveling and other expenses necessarily incurred in the performance of official duties.

Per Board policy, the following general guidelines shall apply to the payment of per diem compensation or reimbursement for travel:

1. No per diem compensation or reimbursement for travel-related expenses shall be paid to Board, Council, or Committee members except for attendance at official Board, Council, or Committee meetings. Attendance at gatherings, events, hearings, conferences or meetings other than official Board, Council or Committee meetings shall be approved in advance by the Board President. The Executive Officer shall be notified of the event and approval shall be obtained from the Board President prior to member's attendance.

2. The term "day actually spent in the discharge of official duties" shall mean such time as is expended from the commencement of a Board, Council, or Committee meeting to the conclusion of that meeting.

   Where it is necessary for a Board member to leave early from a meeting, the Board President shall determine if the member has provided a substantial service during the meeting and, if so, shall authorize payment of compensated per diem and reimbursement for travel-related expenses.

   For specified Board, Council, or Committee work, members will be compensated for actual time spent performing work authorized by the Board President. That work includes, but is not limited to, authorized attendance at gatherings, events, meetings, hearings, or conferences, and committee work. That work does not include preparation time for Board, Council, or Committee meetings. Members cannot claim per diem compensation for time spent traveling to and from a Board, Council, or Committee meeting.

CHAPTER 4. SELECTION OF OFFICERS AND COMMITTEE/LIAISON APPOINTMENTS

Officers of the Board

(BPC Section 1606)

The Board shall elect from its members a President, a Vice President, and a Secretary.

Election of Officers

(Board Policy)

It is Board policy to elect officers at the final meeting of the calendar year for service during the next calendar year, unless otherwise decided by the Board. The newly elected officers shall assume the duties of their respective offices on January 1 of the new year.

Procedure for Nomination

(Board Policy)

Board members interested in running for President, Vice-President, and Secretary shall independently submit their name to the Executive Officer ***no later than 30 days before the final scheduled meeting of the calendar year.***

Election Process

(Board Policy)

The Board's Executive Officer shall conduct the election of officers and shall set the general election procedure.

Officer Vacancies

(Board Policy)

If an office becomes vacant during the year, an election shall be held at the next meeting. If the office of the President becomes vacant, the Vice President shall assume the office of the President. Elected officers shall then serve the remainder of the term.

Absence of Officers

(*Board Policy)*

If an officer is absent from two consecutive meetings, the Board may consider whether it wishes to vacate that position. If the office is that of the President, the Vice President shall assume the office of the President. If the office is that of the Vice President, the Secretary shall assume the office of the Vice President. A vacancy in the office of the Secretary shall be voted on by Board members. Officers shall then serve the remainder of the term.

Committee/Liaison Appointments

(Board Policy)

The Board President shall establish committees, whether standing or special, as he or she deems necessary. The composition of the committees and the appointment of the members shall be determined by the Board President in consultation with the Vice President, Secretary, and Executive Officer. When committees include the appointment of non-Board members, all affected parties

should be considered. The Board President shall strive to appoint Board members to a minimum of one standing committee.

Attendance at Committee Meetings

(Government Code Section 11122.5(c)(6); 81 Ops.Cal.Atty.Gen. 156, 158 (1998); DCA Policy)

If a Board member wishes to attend a meeting of a committee of which he or she is not a member, that Board member cannot participate or vote during the committee meeting, and must not sit on the dais.

Roles and Responsibilities of Board Officers/Committee Chairs/Liaisons

(Board Policy)

President

- Acts as spokesperson for the Board (attends legislative hearings and testifies on behalf of the Board, attends meetings with stakeholders and legislators on behalf of Board, talks to the media on behalf of the Board, and signs letters on behalf of the Board).
- Meets and/or communicates with the Executive Officer on a regular basis.
- Provides oversight to the Executive Officer in performance of duties.
- Approves leave requests, verifies accuracy, approves member timesheets, approves travel, and signs travel expense claims for the Executive Officer.
- Coordinates the annual Executive Officer evaluation process, including contacting the DCA Office of Human Resources to obtain a copy of the Executive Officer Performance Evaluation Form, distributes the evaluation form to members, and collates the ratings and comments for discussion.
- Authors a President's message for every Board meeting and published newsletters.
- Approves Board meeting agendas.
- Chairs and facilitates Board meetings.
- Chairs the Executive Committee.
- Signs specified full Board enforcement approval orders.
- Establishes committees and appoints Chairs and members.
- Establishes 2-person subcommittees and /or task forces to research policy questions when necessary.
- Attends Dental Hygiene Board of California meetings.

Vice President

- May assume the duties above in the President's absence.
- Is a member of Executive Committee.
- Coordinates the revision of the Board's Strategic Plan.
- Coordinates the revision of the Board, Council, and Committee Member Administrative Policy and Procedure Manual.

Secretary

- Calls the roll at each Board meeting and reports that a quorum has been established.
- Calls the roll for each action item.
- Is a member of Executive Committee.

Council or Committee Chair

- Reviews agenda items with EO and Board President prior to Council or Committee meetings.
- Approves the Council or Committee agendas.
- Chairs and facilitates Council or Committee meetings.
- Calls the roll or appoints a member to call the roll for each action item.
- Reports the activities of the Council or Committee to the full Board.

Liaisons

Members acting as liaisons to committees are responsible for keeping the Board informed regarding emerging issues and recommendations made at the Committee level. The Council Chair serves as the Council's liaison to the Board. (BPC § 1742(i).)

Creation of Task Forces

(Board Policy)

It is the policy of the Board that:

1) task forces will be appointed sparingly as the exception rather than the rule and only when the Board finds it cannot address a specific and well defined issue through the existing committee structure;

2) task force members may be appointed by the Board President but must be approved by the full Board;

3) the charge given to the task force will be clear, specific, in writing, and presented to the Board at the time of appointment;

4) task forces of three or more members appointed by the Board are subject to the same Open Meeting laws as the Board (as required by Government Code section 11121(c));

5) all task forces shall give staff at least 20 days advance notice of the time, place, and general agenda for any task force meeting;

6) task forces will meet and report regularly and provide the Board with minutes after every meeting;

7) no task force recommendation will be the basis for Board action in the absence of a formal written report from the task force to the Board.

CHAPTER 5. BOARD ADMINISTRATION AND STAFF

Board Administration

(DCA Reference Manual)

Board members should be concerned primarily with formulating decisions on Board policies rather than decisions concerning the means for carrying out a specific course of action. It is inappropriate for Board members to become involved in the details of program delivery. Strategies for the day-to-day management of programs and staff shall be the responsibility of the Executive Officer.

Board Budget

(Board Policy)

The Executive Officer shall serve as the Board's budget liaison with staff and shall assist staff in the monitoring and reporting of the budget to the Board. The Executive Officer, or the Executive Officer's designee, will attend and testify at legislative budget hearings and shall communicate all budget issues to the Administration and Legislature.

Strategic Planning

(Board Policy)

The Executive Committee shall have overall responsibility for the Board's Strategic Planning Process. The Vice President shall serve as the Board's strategic planning liaison with staff and shall assist staff in the monitoring and reporting of the strategic plan to the Board. The Board will conduct periodic strategic planning sessions and may utilize a facilitator to conduct the strategic planning process.

Legislation

(Board Policy)

When time constraints preclude Board action, the Board delegates the authority to the Executive Officer and the Chair of the Legislative and Regulatory Committee to take action on legislation that would change the Dental Practice Act, impact a previously established Board policy, or affect the public's health, safety, or welfare. Prior to taking a position on legislation, the Executive Officer shall consult with the Board President and Legislative and Regulatory Committee Chair. The Board shall be notified of such action as soon as possible.

Communications with Other Organizations and Individuals

(Board Policy)

The official spokesperson for the Board is the Board President. The President may designate the Executive Officer, the Chief of Enforcement, other Board members, or staff to speak on behalf of the Board. Board members shall not speak or act for the Board without proper authorization.

It is the policy of the Board to accommodate speaking requests from all organizations, schools, consumer groups, or other interested groups, whenever possible. If the Board representative is addressing a dental school or group of potential candidates for licensure, the program must be open to all interested parties. The President may authorize Board members to speak to schools, organizations, consumer groups, or other interested groups upon request by members or written requests from said schools, organizations or groups.

Media Inquiries

(Board Policy)

If a member of the Board receives a media call, the member should promptly refer the caller to the DCA Public Information Officer who is employed to interface with all types of media on any type of inquiry. It is required that members make this referral as the power of the Board is vested in the Board itself and not with an individual Board member. Expressing a personal opinion can be misconstrued as a Board policy or position and may be represented as a position that the Board has taken on a particular issue when it has not.

A Board member who receives a call should politely thank the caller for the call, but state that it is the Board's policy to refer all callers to the Public Information Officer. The Board member should then send an email to the Executive Officer indicating they received a media call and relay any information supplied by the caller.

Legal Opinions – Requests from Outside Parties

(Board Policy)

The Board does not provide legal services for persons or entities outside the Board staff. Requests for legal opinions from outside entities are to be discussed with the Board President and legal counsel to determine whether it is an issue over which the Board has jurisdiction and the opinion, if prepared, could be posted on the Board's Web site and benefit the general public rather than one individual. Persons making such requests would be notified that the Board will not be responding directly to their request but will post the opinion on the Internet when it is final.

Service of Lawsuits

(Board Policy)

Board members may receive service of a lawsuit against themselves and the Board pertaining to a certain issue (e.g., a disciplinary matter, civil complaint, legislative matter, etc.). To prevent a confrontation, the Board member should accept service. Upon receipt, the Board member should notify the Executive Officer of the service and indicate the name of the matter that was served and any pertinent information. The Board member should then mail the entire package that was served to the Executive Officer as soon as possible. The Board's legal counsel will provide instructions to the Board members on what is required of them once service has been made. The Board members may be required to submit a request for representation to the Board to provide to the Attorney General's Office.

Executive Officer Evaluation

(Board Policy)

The Board shall evaluate the performance of the Executive Officer annually.

Executive Officer Vacancy

(Board Policy)

In the event the Executive Officer position becomes vacant, the Board may, at its discretion, appoint the Assistant Executive Officer or another employee of the Board as the Acting Executive Officer or Interim Executive Officer. An Acting Executive Officer is only entitled to his or her current salary. If an Interim Executive Officer is appointed, the Board shall set his or her salary at an amount within the

Executive Officer's salary range. The DCA Office of Human Resources will provide assistance with the temporary appointment process and the process for the search for a new Executive Officer.

Board Staff

(DCA Reference Manual)

Employees of the Board, with the exception of the Executive Officer, are civil service employees. Their employment, pay, benefits, discipline, termination, and conditions of employment are governed by a myriad of civil service laws and regulations and often by collective bargaining labor agreements. Because of this complexity, it is most appropriate that the Board delegate all authority and responsibility for management of the civil service staff to the Executive Officer. Consequently, the Executive Officer shall solely be responsible for all day-to-day personnel transactions.

Business Cards

(Board Policy)

Business cards will be provided to each Officer of the Board with the Board's office address, telephone and fax number, and Web site address. A Board Officer's business address, telephone and fax number, and e-mail address may be listed on the card at the member's request.

CHAPTER 6. OTHER POLICIES AND PROCEDURES

Availability

(Board Policy)

It is recommended that Board members who will be unavailable for a period longer than three consecutive days notify the Executive Officer and the Board President.

Mandatory Training

(DCA Policy)

State law requires Board members within to complete training in several important areas, including ethics, sexual harassment prevention, and Board Member Orientation Training.

Ethics Orientation

http://www.dcaboardmembers.ca.gov/training/ethics_orientation.shtml

(Government Code Section 11146.1)

California law requires all appointees to take an ethics orientation within the first six months of their appointment and to repeat this ethics orientation every two years throughout their term.

The training includes important information on activities or actions that are inappropriate or illegal. For example, generally public officials cannot take part in decisions that directly affect their own economic interests. They are prohibited from misusing public funds, accepting free travel, and accepting honoraria. There are limits on gifts.

An online, interactive version of the training is available on the Attorney General's Web site at http://oag.ca.gov/ethics. An accessible, text-only version of the materials is also available at the Attorney General's Web site.

Sexual Harassment Prevention

http://www.dcaboardmembers.ca.gov/training/harassment_prevention.shtml

(Government Code Section 12950.1)

All new board members are required to attend at least two hours of classroom or other interactive training and education regarding sexual harassment prevention within six months of their appointment. The Equal Employment Opportunity (EEO) Office is responsible for ensuring that all board members complete their required training. A copy of your certificate of proof of training must be sent to the EEO Office. Please identify which Board/Committee/Commission you serve on.

For information on how to receive Sexual Harassment Prevention Training contact:

Equal Employment Opportunity Office
1625 N. Market Blvd, Ste N330
Sacramento, CA 95834
(916) 574-8280 (916) 574-8604 Fax

Board Member Orientation

(BPC Section 453)

Every newly appointed and reappointed board member is required to complete a training and orientation program offered by DCA within one year of assuming office. The training covers the functions, responsibilities, and obligations that come with being a member of a DCA board.

For more information and assistance with scheduling training, please contact:

SOLID Training Solutions
1747 North Market Blvd, Ste. 270
Sacramento, CA 95834 (916)
574-8316
SOLID@dca.ca.gov

Board Member Disciplinary Actions

(Board Policy)

The Board may censure a member if, after a hearing before the Board, the Board determines that the member has acted in an inappropriate manner.

The President of the Board shall sit as President of the hearing unless the censure involves the President's own actions, in which case the Vice President of the Board shall sit as President. In accordance with the Bagley-Keene Open Meeting Act, the censure hearing shall be conducted in open session.

Removal of Board Members

(BPC Sections 106, 106.5, 1605)

The Governor has the power to remove from office at any time any member of any Board appointed by him or her for continued neglect of duties required by law or for incompetence or unprofessional or dishonorable conduct. The Governor also may remove from office a Board member who directly or indirectly discloses examination questions to an applicant for examination for licensure. Those proceedings would be conducted in accordance with the Bagley-Keene Open Meeting Act, and that member would be subject to a misdemeanor violation (BPC § 123).

Resignation of Board Members

(Government Code Section 1750)

In the event that it becomes necessary for a Board member to resign, a letter shall be sent to the appropriate appointing authority (Governor, Senate Rules Committee, or Speaker of the Assembly) with the effective date of the resignation. State law requires written notification. A copy of this letter shall also be sent to the DCA Director Board President, and Executive Officer.

Form 700 – Statement of Economic Interests

(Government Code Section 87203; CCR, Title 2, Section 18730)

Board, Council, and Committee members are public officials required to annually report their investments, interests in real property, and income to the Fair Political Practices Commission using the Form 700, Statement of Economic Interests, which is a publicly disclosable record. Each member must submit their Form 700 using the online submission process.

Information on the Form 700 and other conflicts of interest topics can be found at:
https://www.dca.ca.gov/about_us/board_members/required_training.shtml

Conflict of Interest

(Government Code Section 87100; Common Law; BPC Section 450; DCA Policy)

No Board, Council, or Committee member may make, participate in making, or in any way attempt to use his or her official position to influence a governmental decision in which he or she knows or has reason to know he or she has a financial interest. Any member who has a financial interest shall disqualify him or herself from making or attempting to use his or her official position to influence the decision.

Conflicts of interest or disqualification issues mainly arise from four general sources: (1) financial conflicts arising under the Political Reform Act of 1974 (Gov. Code § 87100 et seq.); (2) common law conflicts of interest arising from personal interest or bias, or even the potential appearance of a bias or personal interest in a matter even in the absence of a financial conflict of interest; (3) the general provisions of BPC section 450 et seq. that detail the qualifications and restrictions on public members of a board; and (4) conflicts arising under the DCA Incompatible Work Activities policy.

Any member who feels he or she is entering into a situation where there is a potential for a conflict of interest should immediately consult the Executive Officer or the Board's legal counsel.

Honoraria Prohibition

(Government Code Section 89502)

As a general rule, Board, Council, and Committee members should decline honoraria for speaking at, or otherwise participating in, professional association conferences and meetings. A member of a state board is precluded from accepting an honorarium from any source, if the board member would be required to report the receipt of income or gifts from that source on his or her statement of economic interest.

There are limited exceptions to the honoraria prohibition. The acceptance of an honorarium is not prohibited under the following circumstances: (1) when an honorarium is returned to the donor (unused) within 30 days; (2) when an honorarium is delivered to the State Controller within thirty days for donation to the General Fund (for which a tax deduction is not claimed); and (3) when an honorarium is not delivered to the member, but is donated directly to a bona fide charitable, educational, civic, religious, or similar tax exempt, non-profit organization.

In light of this prohibition, members should report all offers of honoraria to the Board President, so that he or she, in consultation with the Executive Officer and legal counsel, may determine whether the potential for conflict of interest exists.

Paid Travel to Attend Meeting Unrelated to Board Business

(Government Code Section 89506)

In general, payments by a third party for a public official's travel are considered a gift, subject to the per year gift limit, and must be reported by the official on his or her statement of economic interests; however, there are exceptions to this rule. Payments, advances, or reimbursements, for travel, including actual transportation and related lodging and subsistence that is reasonably related to a

legislative or governmental purpose, or to an issue of state, national, or international public policy, are not prohibited and are not subject to the per year gift limit if either of the following apply:

(1) The travel is in connection with a speech given by the member, the lodging and subsistence expenses are limited to the day immediately preceding, the day of, and the day immediately following the speech, and the travel is within the United States.

(2) The travel is provided by a government, a governmental agency, a foreign government, a governmental authority, a bona fide public or private educational institution, as defined in Section 203 of the Revenue and Taxation Code, a nonprofit organization that is exempt from taxation under Section 501(c)(3) of the Internal Revenue Code, or by a person domiciled outside the United States which substantially satisfies the requirements for tax-exempt status under Section 501(c)(3) of the Internal Revenue Code.

Keep in mind that the rules regarding financial conflicts of interest are complex, and, therefore, Board members should contact the DCA Ethics Officer at (916) 574-8220 for assistance.

Contact with Candidates

(Board Policy)

Board, Council, and Committee members shall not intervene on behalf of a candidate for licensure for any reason as this may create a conflict of interest. Members should forward all contacts or inquiries to the Executive Officer or Board staff.

Gifts from Candidates

(Board Policy)

Gifts of any kind to members or the staff from candidates for licensure with the Board shall not be permitted.

Request for Records Access

(Board Policy)

No Board, Council, or Committee member may access the file of a licensee or candidate without the Executive Officer's knowledge and approval of the conditions of access. Records or copies of records shall not be removed from the Board's office.

Ex Parte Communications

(Government Code Section 11430.10 et seq.)

The Administrative Procedure Act prohibits *ex parte* communications.

An "ex parte" communication is a communication to the decision-maker made by one party to an enforcement action without participation by the other party. While there are specified exceptions to the general prohibition, the key provision is found in Government Code section 11430.10, subdivision (a), which states:

> "While the proceeding is pending, there shall be no communication, direct or indirect, regarding any issue in the proceeding to the presiding officer from an employee or

representative of an agency that is a party or from an interested person outside the agency, without notice and an opportunity for all parties to participate in the communication."

Board members are prohibited from an *ex parte* communication with Board enforcement staff while a proceeding is pending.

Occasionally, an applicant who is being formally denied licensure, or a licensee against whom disciplinary action is being taken, will attempt to directly contact Board members. If the communication is written, the person should read only far enough to determine the nature of the communication. Once he or she realizes it is from a person against whom an action is pending, they should reseal the documents and send them to the Chief of Enforcement.

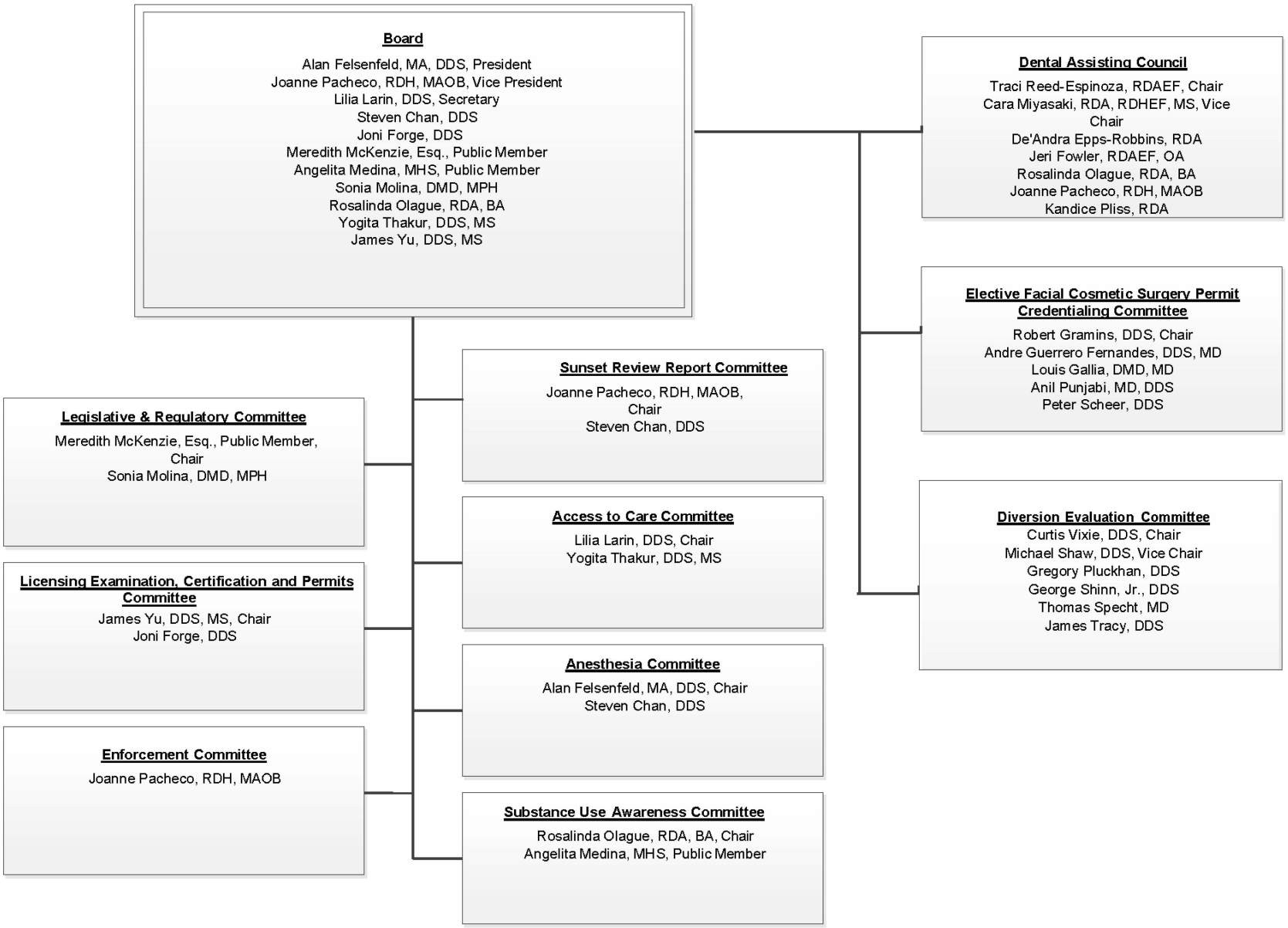
If a Board member receives a telephone call from an applicant or licensee against whom an action is pending, he or she should immediately tell the person they cannot speak to them about the matter. If the person insists on discussing the case, he or she should be told that the Board member would be required to excuse him or herself from any participation in the matter. Therefore, continued discussion is of no benefit to the applicant or licensee.

If a Board member believes that he or she has received an unlawful *ex parte* communication, he or she should contact the Board's legal counsel.

ATTACHMENT B

Org Chart
Board/Committee
2023

DEPARTMENT OF CONSUMER AFFAIRS
DENTAL BOARD OF CALIFORNIA



ATTACHMENT C

OCCUPATIONAL ANALYSIS OF THE REGISTERED DENTAL ASSISTANT PROFESSION

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

DENTAL BOARD OF CALIFORNIA

OCCUPATIONAL ANALYSIS OF THE REGISTERED DENTAL ASSISTANT PROFESSION

June 2023

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

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OFFICE OF PROFESIONAL EXAMINATION SERVICES

This occupational analysis report is mandated by California Business and Professions Code (BPC) § 139 and by DCA *Policy OPES Licensure Examination Validation (Policy OPES 22-01.)*

EXECUTIVE SUMMARY

The Dental Board of California (Board) requested that the Department of Consumer Affairs' Office of Professional Examination Services (OPES) conduct an occupational analysis (OA) of the registered dental assistant (RDA) profession in California. The purpose of the OA is to define practice in terms of critical tasks that RDAs must be able to perform safely and competently at the time of licensure. The results of this OA provide a description of practice for the RDA profession and provide the basis for constructing a valid and legally defensible Registered Dental Assistant Written Examination.

OPES test specialists began by researching the profession and meeting with RDAs working throughout California. The purpose of these meetings was to identify the tasks performed by RDAs and to specify the knowledge required to perform those tasks safely and competently. Using the information gathered from the research and meetings, OPES test specialists developed a preliminary list of tasks performed by RDAs in their practice, along with a list of the knowledge needed to perform those tasks.

In October 2022, OPES convened a workshop to review and refine the preliminary lists of tasks and knowledge statements describing RDA practice in California. RDAs participated in the workshops as subject matter experts (SMEs). The SMEs represented the profession in terms of location of practice and years licensed. In November 2022, OPES convened a second workshop to review and finalize the preliminary lists of tasks and knowledge statements describing RDA practice in California. The SMEs also linked each task with the knowledge required to perform that task and reviewed demographic questions to be used on a two-part OA questionnaire to be completed by a sample of RDAs statewide.

After the second workshop, OPES test specialists developed the OA questionnaire. The development included a pilot study that was conducted using a group of RDAs who participated in the October and November 2022 workshops. The pilot study participants' feedback was incorporated into the final questionnaire, which was administered in December 2022 and January 2023.

In the first part of the OA questionnaire, RDAs were asked to provide demographic information related to their work settings and practice. In the second part, RDAs were asked to rate specific tasks by frequency (i.e., how often the RDA performs the task in their current practice) and importance (i.e., how important the task is to effective performance in their current practice). They were also asked to rate each knowledge statement by importance (i.e., how important the knowledge is to effective performance in their current practice).

In December 2022, on behalf of the Board, OPES sent an email to a sample of 17,418 actively practicing RDAs, inviting them to complete the online OA questionnaire. The email invitation was sent to RDAs for whom the Board had an email address on file. Reminder emails were sent weekly after the initial invitation was made.

A total of 2,609 RDAs, or approximately 15.0% of the RDAs who received an email invitation, responded to the OA questionnaire. The final number of respondents included in the data analysis was 968 (5.6%). This response rate reflects two adjustments. First, OPES excluded data from respondents who indicated they were not currently licensed and practicing as RDAs in California. Second, OPES excluded data from questionnaires that contained a large portion of incomplete responses.

OPES test specialists then performed data analyses of the task and knowledge ratings obtained from the OA questionnaire respondents. The task frequency and importance ratings were combined to derive an overall criticality index for each task statement.

Once the data were analyzed, OPES conducted a third workshop with SMEs in February 2023. The SMEs evaluated the criticality indices and determined whether any task statements should be excluded from the examination outline. They also reviewed the list of knowledge statements to verify that each statement was critical for safe and competent entry level performance as an RDA in California. The SMEs established the final linkage between tasks and knowledge statements, organized the tasks and knowledge statements into content areas, and wrote descriptions of those content areas. The SMEs then evaluated the preliminary content area weights and determined the final weights for the California Registered Dental Assistant Written Examination outline.

The examination outline is structured into four content areas weighted relative to each of the other content areas. The new outline identifies the tasks and knowledge critical to safe and competent RDA practice in California at the time of licensure. The examination outline developed as a result of this OA provides a basis for developing the Registered Dental Assistant Written Examination.

Results of this OA provide information regarding current practice that can be used to develop valid and legally defensible examinations and to make job-related decisions regarding occupational licensure.

OVERVIEW OF THE REGISTERED DENTAL ASSISTANT WRITTEN EXAMINATION OUTLINE

Content Area	Content Area Description	Percent Weight
1. Assessment and Diagnostic Procedures	This area assesses the candidate's knowledge of reviewing information about a patient's history and oral conditions as they relate to dental treatment. This area also assesses the candidate's knowledge of assisting with diagnostic records and chart information related to dental treatment. These activities are performed under the supervision of a dentist.	15
2. Dental Procedures	This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.	50
3. Infection Control and Health and Safety	This area assesses the candidate's knowledge of maintaining a safe and sanitary work environment and to adhere to infection control protocols and standard precautions.	25
4. Laws and Regulations	This area assesses the candidate's knowledge of laws and regulations regarding licensing requirements, scope of practice, professional conduct, and professional responsibilities.	10
	TOTAL	100

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CHAPTER 1 | INTRODUCTION

PURPOSE OF THE OCCUPATIONAL ANALYSIS

The Dental Board of California (Board) requested that the Department of Consumer Affairs' Office of Professional Examination Services (OPES) conduct an occupational analysis (OA) as part of the Board's comprehensive review of the registered dental assistant (RDA) profession in California. The purpose of the OA is to identify critical activities performed by RDAs in California. The results of this OA provide a description of practice for the RDA profession and a basis for developing a valid and legally defensible Registered Dental Assistant Written Examination.

PARTICIPATION OF SUBJECT MATTER EXPERTS

California RDAs participated as subject matter experts (SMEs) during the OA to ensure that the description of practice directly reflects current RDA practice in California. These SMEs represented the occupation in terms of geographic location of practice and years licensed. The SMEs provided technical expertise and information regarding different aspects of current RDA practice. During the workshops, the SMEs developed and reviewed the tasks and knowledge statements describing RDA practice, organized the tasks and knowledge statements into content areas, evaluated the responses to the OA questionnaire, and developed the examination outline.

ADHERENCE TO LEGAL STANDARDS AND GUIDELINES

Licensure programs in the State of California adhere strictly to federal and state laws and regulations, as well as to professional guidelines and technical standards. For the purposes of OAs, the following laws and guidelines are authoritative:

- California Business and Professions Code **(BPC)** § 139.
- 29 Code of Federal Regulations Part 1607 – Uniform Guidelines on Employee Selection Procedures (1978).
- California Fair Employment and Housing Act, Government Code § 12944.
- *Principles for the Validation and Use of Personnel Selection Procedures* (2018), Society for Industrial and Organizational Psychology (SIOP).

- *Standards for Educational and Psychological Testing (2014 Standards)*, American Educational Research Association, American Psychological Association, and National Council on Measurement in Education.

For a licensure, certification, or registration program to meet these standards, it must be solidly based upon the occupational activities required for practice.

DESCRIPTION OF OCCUPATION

An RDA may perform all the following duties according to **BPC** § 1752.4:

(1) All duties that a dental assistant is allowed to perform.

(2) Mouth-mirror inspections of the oral cavity, to include charting of obvious lesions, existing restorations, and missing teeth.

(3) Apply and activate bleaching agents using a nonlaser light-curing device.

(4) Use of automated caries detection devices and materials to gather information for diagnosis by the dentist.

(5) Obtain intraoral images for computer-aided design (CAD), milled restorations.

(6) Pulp vitality testing and recording of findings.

(7) Place bases, liners, and bonding agents.

(8) Chemically prepare teeth for bonding.

(9) Place, adjust, and finish direct provisional restorations.

(10) Fabricate, adjust, cement, and remove indirect provisional restorations, including stainless steel crowns when used as a provisional restoration.

(11) Place post-extraction dressings after inspection of the surgical site by the supervising licensed dentist.

(12) Place periodontal dressings.

(13) Dry endodontically treated canals using absorbent paper points.

(14) Adjust dentures extra-orally.

(15) Remove excess cement from surfaces of teeth with a hand instrument.

(16) Polish coronal surfaces of the teeth.

(17) Place ligature ties and archwires.

(18) Remove orthodontic bands.

(19) All duties that the board may prescribe by regulation.

(b) A registered dental assistant may only perform the following additional duties if he or she has completed a board-approved registered dental assistant educational program in those duties, or if he or she has provided evidence, satisfactory to the board, of having completed a board-approved course in those duties.

(1) Remove excess cement with an ultrasonic scaler from supragingival surfaces of teeth undergoing orthodontic treatment.

(2) The allowable duties of an orthodontic assistant permitholder as specified in Section 1750.3. A registered dental assistant shall not be required to complete further instruction in the duties of placing ligature ties and archwires, removing orthodontic bands, and removing excess cement from tooth surfaces with a hand instrument.

(3) The allowable duties of a dental sedation assistant permitholder as specified in Section 1750.5.

(4) The application of pit and fissure sealants.

(c) Except as provided in Section 1777, the supervising licensed dentist shall be responsible for determining whether each authorized procedure performed by a registered dental assistant should be performed under general or direct supervision.

(d) This section shall become operative on January 1, 2010.

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CHAPTER 2 | OCCUPATIONAL ANALYSIS QUESTIONNAIRE

TASKS AND KNOWLEDGE STATEMENTS

To develop a preliminary list of tasks and knowledge statements, OPES test specialists integrated information gathered from literature reviews of profession-related sources (e.g., previous OA reports, articles, laws and regulations, and industry publications) and from meetings with SMEs. The statements were then organized into major content areas of practice.

In October and November 2022, OPES test specialists facilitated two workshops. Eleven SMEs with varying years of experience and practicing in different geographic locations participated in these workshops. During the first workshop in October, SMEs evaluated the tasks and knowledge statements for technical accuracy, level of specificity, and comprehensiveness of assessment of practice. In addition, SMEs evaluated the organization of task statements within content areas to ensure that the content areas were independent and non-overlapping.

During the second workshop, the SMEs performed a preliminary linkage of the tasks and knowledge statements. The linkage was performed to identify the knowledge required for performance of each task and to verify that each identified knowledge statement was important for safe and competent performance as an RDA. The linkage ensured that all tasks were linked to at least one knowledge statement and that each knowledge statement was linked to at least one task. The SMEs also evaluated the scales that would be used for rating tasks and knowledge statements. Finally, the SMEs reviewed and revised the proposed demographic questions for the online OA questionnaire.

OPES used the final list of tasks, associated knowledge statements, demographic questions, and rating scales to develop the online OA questionnaire that was sent to a sample of California RDAs.

QUESTIONNAIRE DEVELOPMENT

OPES test specialists developed the online OA questionnaire designed to solicit RDAs' ratings of the tasks and knowledge statements. The surveyed RDAs were asked to rate how often they perform each task in their current practice (Frequency) and how important each task is to effective performance of their current practice (Importance). In addition, they were asked to rate how important each knowledge statement is to the effective performance of their current practice (Importance). The OA questionnaire also included a demographic section to obtain relevant professional background information about responding RDAs. The OA questionnaire is Appendix E.

PILOT STUDY

Before administering the final questionnaire, OPES conducted a pilot study of the online questionnaire. The draft questionnaire was sent to the 11 SMEs who had participated in the OA workshops. OPES received feedback on the pilot study from 7 respondents. The SMEs reviewed the tasks and knowledge statements in the questionnaire for technical accuracy and for whether they reflected RDA practice. The SMEs also provided feedback about the estimated time for completion, online navigation, and ease of use of the questionnaire. OPES used this feedback to refine the final questionnaire, which was administered from December 18, 2022 to January 22, 2023.

CHAPTER 3 | RESPONSE RATE AND DEMOGRAPHICS

SAMPLING STRATEGY AND RESPONSE RATE

In December 2022, on behalf of the Board, OPES sent an email to a sample of 17,418 actively practicing RDAs for whom the Board had an email address on file, inviting them to complete the online OA questionnaire. Reminder emails were sent weekly after the initial invitation. The email invitation to practitioners is Appendix D.

A total of 2,609 RDAs, or approximately 15.0% of the RDAs who received an email invitation, responded to the OA questionnaire. The final number of respondents included in the data analysis was 968 (5.6%). This response rate reflects two adjustments. First, OPES excluded data from respondents who indicated they were not currently holding a license and practicing as RDAs in California. Second, OPES excluded data from questionnaires with a large portion of incomplete responses.

DEMOGRAPHIC SUMMARY

As shown in Table 1 and Figure 1, the responding RDAs reported a range of years of experience from more than 20 (27.5%) to 1–5 (26.3%). A majority of respondents (52.7%) reported holding an RDA license for 11 years or more, while 47.3% reported holding an RDA license for 10 years or fewer.

Table 2 and Figure 2 show that 69.8% of respondents reported that they had worked as an unlicensed dental assistant for 5 years or fewer before obtaining an RDA license, while 12.6% reported that they had worked as a dental assistant for 6 years or longer.

Table 3 and Figure 3 show other licenses or certificates that respondents reported holding in addition to their RDA license. Most respondents reported holding a coronal polishing certificate (97.2%), while 91.0% of respondents reported that they held a radiation safety certificate. In addition, 67.1% of respondents reported holding a pit and fissure sealant certificate. A small percentage of respondents reported that they held an ultrasonic scaling certificate (18.4%), an orthodontic assistant permit (5.7%), or a dental sedation assistant permit (2.9%).

Table 4 and Figure 4 show that 79.5% of the respondents reported that their primary work setting was located in an urban area, and 20.1% reported that it was located in a rural area.

Table 5 and Figure 5 show that 32.2% of respondents reported working in a private dental practice with one dentist, while 27.8% reported working in a private dental practice with two or more dentists. Approximately 16.3% of the respondents reported that they worked in a specialty dental practice. In addition, approximately 13.8% of respondents reported that they worked in public health dentistry, a dental school clinic, or the military.

Table 6 and Figure 6 show that 70.1% of respondents reported that they worked in general dentistry, while 7.6% described their primary work setting as orthodontics, 6.4% as pedodontics, 2.6% as periodontics, 2.3% as oral surgery, 1.8% as endodontics, and 1.3% as prosthodontics.

Table 7 and Figure 7 show that 52.1% of respondents reported 1–3 RDAs working in their primary work setting, while 22.0% reported that they were the only RDA in their primary work setting, and 25.8% reported 4 or more RDAs.

Table 8 and Figure 8 show that 78.9% of respondents reported that their work setting did not include RDAEFs; 15.3% reported that their work setting included 1 RDAEF; 3.6% reported 2–3 RDAEFs; and 2.0% reported 4 or more RDAEFs.

Table 9 and Figure 9 show that 45.1% of respondents reported that their practice setting did not employ unlicensed dental assistants, while 46.8% reported that 1–3 unlicensed dental assistants worked in their primary work setting, and 7.9% reported 4 or more unlicensed dental assistants.

Table 10 shows the geographical regions where respondents perform most of their work. A breakdown of regional data organized by county is Appendix A.

Additional demographic information from respondents can be found in Tables 1–10 and Figures 1–9.

TABLE 1 – NUMBER OF YEARS LICENSED AS AN RDA

YEARS	NUMBER (N)	PERCENT
Fewer than 12 months	73	8.4
1 to 5 years	229	26.3
6 to 10 years	110	12.6
11 to 15 years	91	10.5
16 to 20 years	128	14.7
More than 20 years	239	27.5
Total	870	100

FIGURE 1 – NUMBER OF YEARS LICENSED AS AN RDA

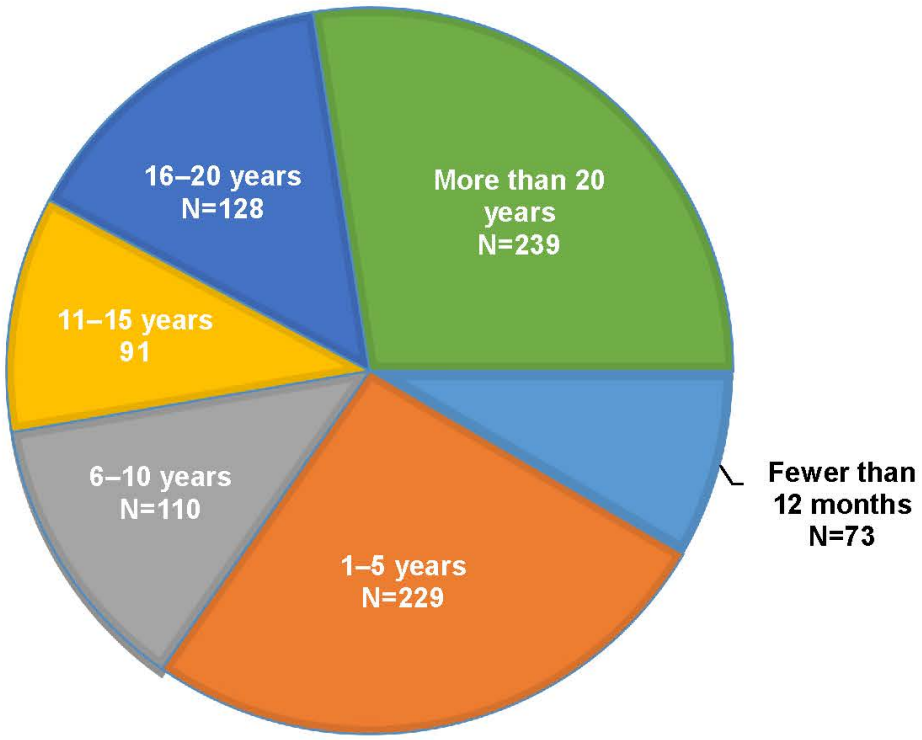


TABLE 2 – NUMBER OF YEARS WORKING AS A DENTAL ASSISTANT BEFORE OBTAINING RDA LICENSE

YEARS	NUMBER (N)	PERCENT
Not applicable (n/a)	153	17.6
Fewer than 12 months	281	32.3
1 to 5 years	326	37.5
6 to 10 years	66	7.6
11 to 15 years	23	2.6
16 to 20 years	16	1.8
More than 20 years	5	0.6
Total	870	100

FIGURE 2 – NUMBER OF YEARS WORKING AS A DENTAL ASSISTANT BEFORE OBTAINING RDA LICENSE

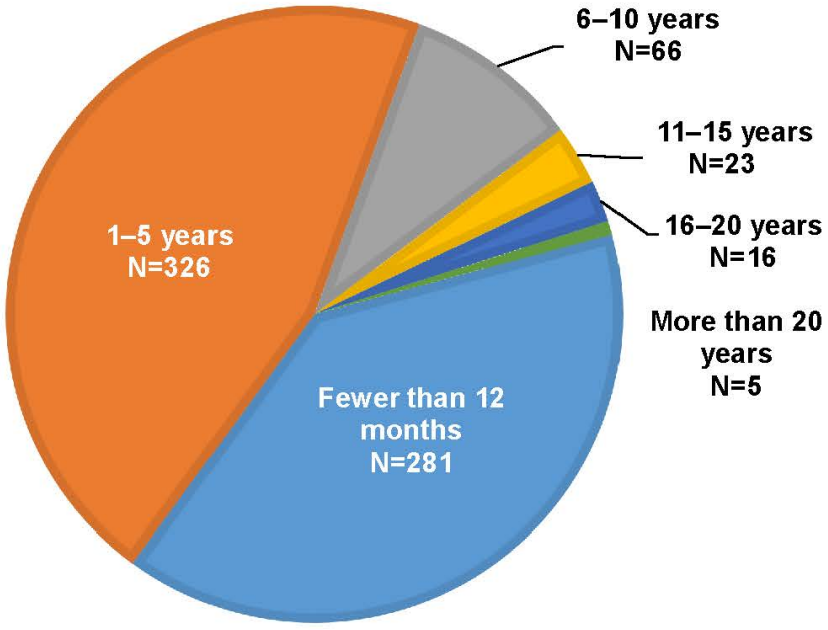
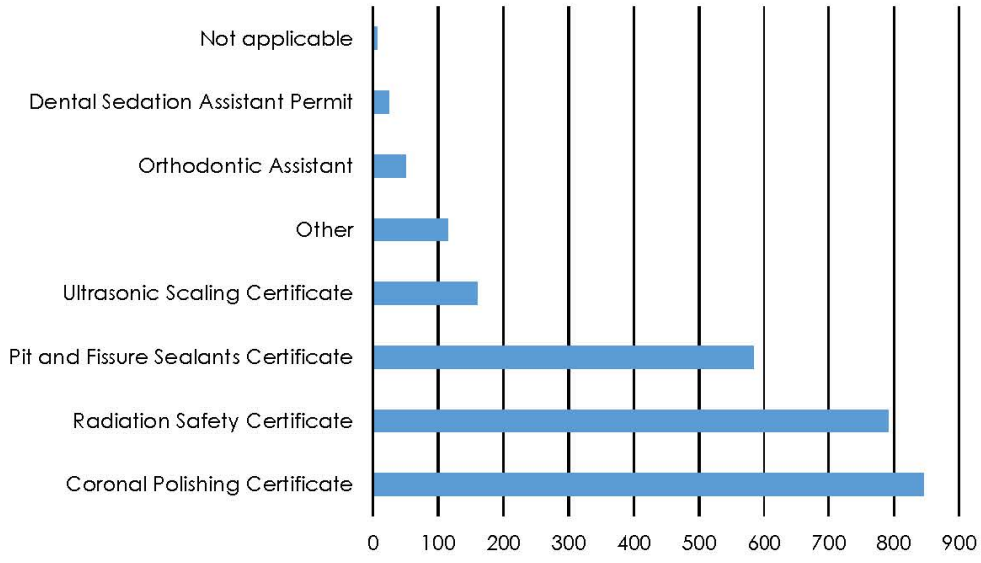


TABLE 3 – LICENSES AND CERTIFICATES HELD IN ADDITION TO RDA*

LICENSE/CERTIFICATE*	NUMBER (N)	PERCENT**
Not applicable	7	0.8
Coronal Polishing Certificate	846	97.2
Dental Sedation Assistant Permit	25	2.9
Orthodontic Assistant Permit	50	5.7
Pit and Fissure Sealants Certificate	584	67.1
Ultrasonic Scaling Certificate	160	18.4
Radiation Safety Certificate	792	91.0
Other	115	13.2

*NOTE: Respondents were asked to select all that apply.
**NOTE: Percentages indicate the proportion in the sample of respondents.

FIGURE 3 – LICENSES AND CERTIFICATIONS HELD IN ADDITION TO RDA*



*NOTE: Respondents were asked to select all that apply.

TABLE 4 – LOCATION OF PRIMARY WORK SETTING

LOCATION	NUMBER (N)	PERCENT*
Urban (more than 50,000 people)	692	79.5
Rural (fewer than 50,000 people)	175	20.1
Total	867	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 4 – LOCATION OF PRIMARY WORK SETTING

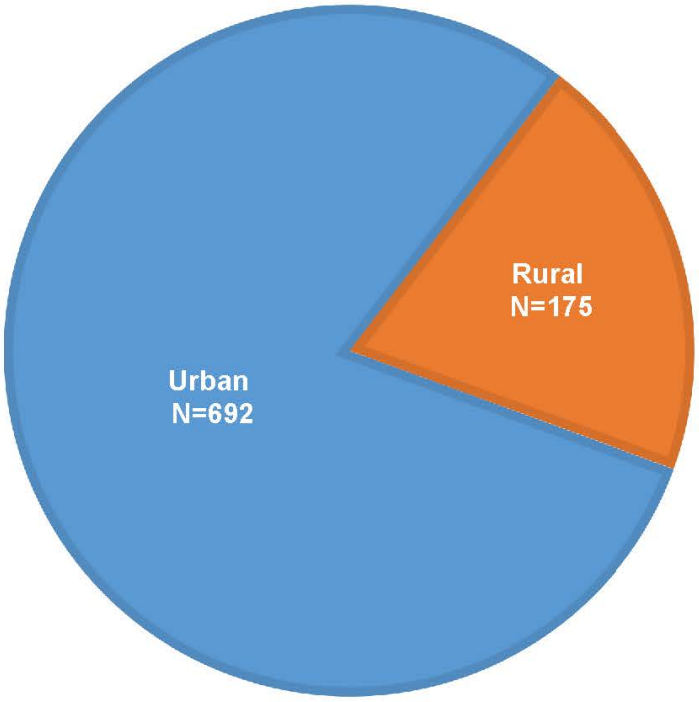


TABLE 5 – PRIMARY WORK SETTING DESCRIPTION

WORK SETTING	NUMBER (N)	PERCENT*
Private dental practice with one dentist	280	32.2
Private dental practice with two or more dentists	242	27.8
Specialty dental practice	142	16.3
Public health dentistry	89	10.2
Dental school clinic	26	3.0
Military	5	0.6
Other	82	9.4
Total	866	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 5 – PRIMARY WORK SETTING DESCRIPTION

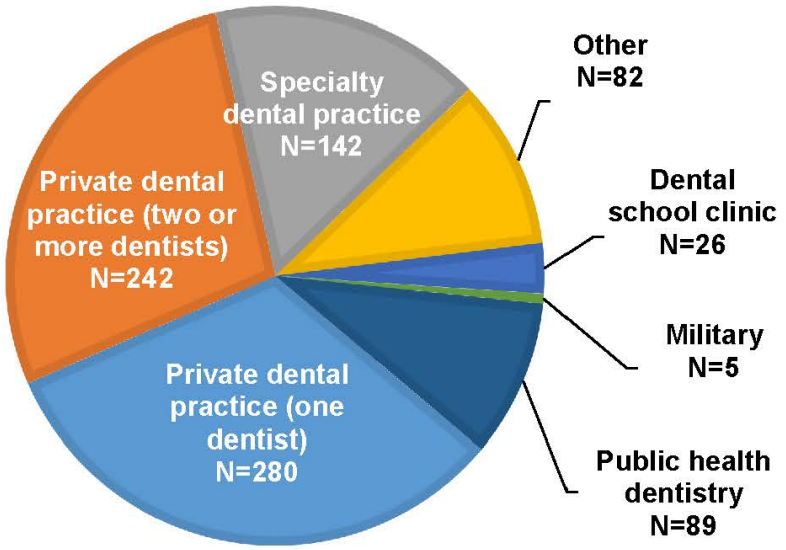


TABLE 6 – DENTAL PRACTICE DESCRIPTION

DENTAL PRACTICE	NUMBER (N)	PERCENT*
General dentistry	610	70.1
Orthodontic dentistry	66	7.6
Endodontic dentistry	16	1.8
Periodontic dentistry	23	2.6
Pedodontic dentistry	56	6.4
Prosthodontic dentistry	11	1.3
Oral surgery	20	2.3
Other	68	7.8
Total	870	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 6 – DESCRIPTION OF DENTAL PRACTICE IN PRIMARY WORK SETTING

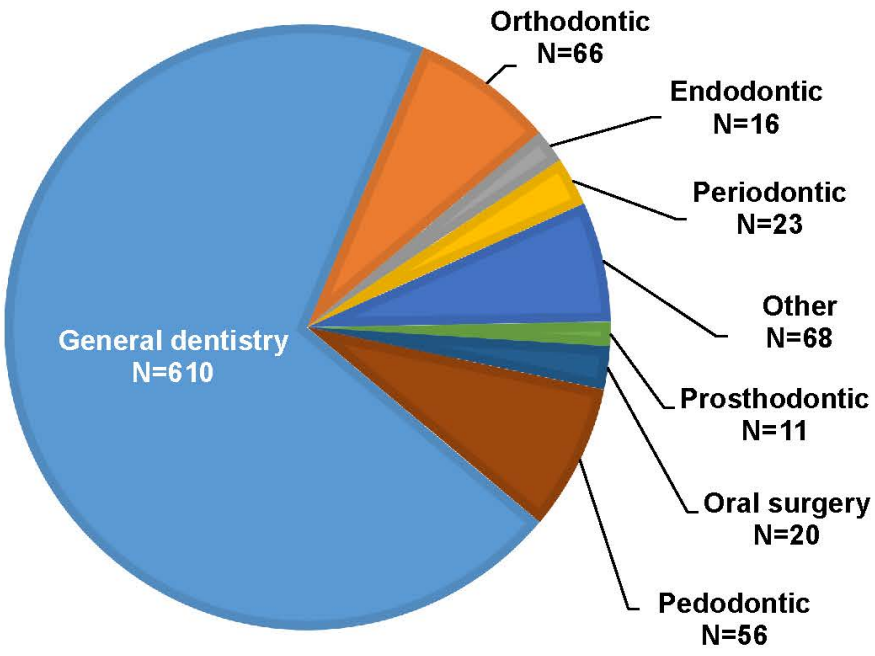


TABLE 7 – NUMBER OF LICENSED REGISTERED DENTAL ASSISTANTS IN PRIMARY WORK SETTING (NOT INCLUDING YOURSELF)

REGISTERED DENTAL ASSISTANTS	NUMBER (N)	PERCENT*
0	191	22.0
1	204	23.4
2 to 3	250	28.7
4 to 5	84	9.7
More than 5	140	16.1
Total	869	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 7 – NUMBER OF LICENSED REGISTERED DENTAL ASSISTANTS IN PRIMARY WORK SETTING (NOT INCLUDING YOURSELF)

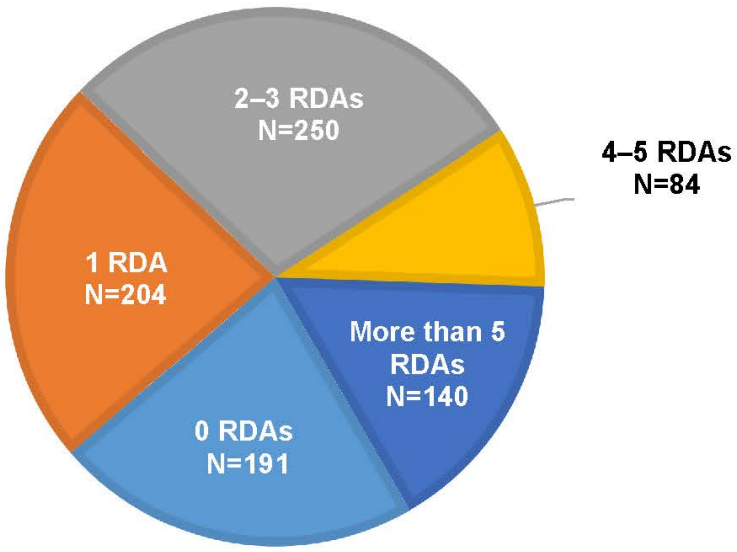


TABLE 8 – NUMBER OF LICENSED RDAEFs IN PRIMARY WORK SETTING

RDAEFs	NUMBER (N)	PERCENT*
0	686	78.9
1	133	15.3
2 to 3	31	3.6
4 to 5	12	1.4
More than 5	5	0.6
Total	867	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 8 – NUMBER OF LICENSED RDAEFs IN PRIMARY WORK SETTING

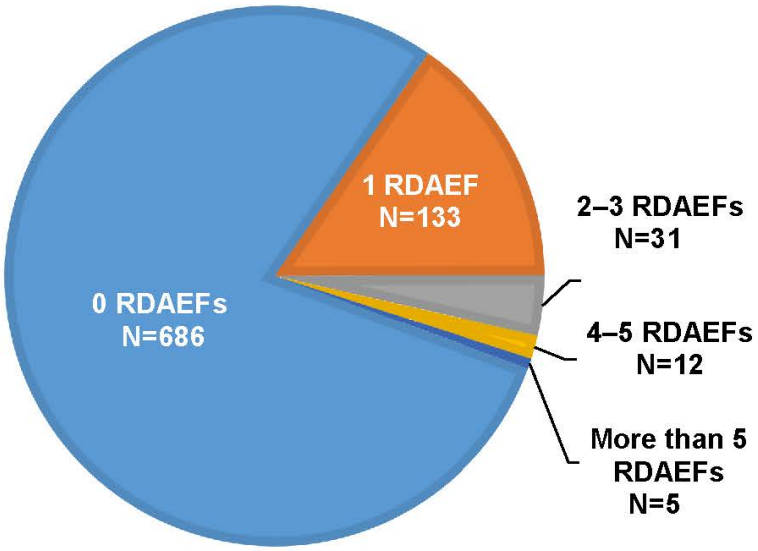


TABLE 9 – NUMBER OF UNLICENSED DENTAL ASSISTANTS IN PRIMARY WORK SETTING

DENTAL ASSISTANTS	NUMBER (N)	PERCENT*
0	392	45.1
1	225	25.9
2 to 3	182	20.9
4 to 5	35	4.0
More than 5	34	3.9
Total	868	100

*NOTE: Percentages do not add to 100 due to rounding.

FIGURE 9 – NUMBER OF UNLICENSED DENTAL ASSISTANTS IN PRIMARY WORK SETTING

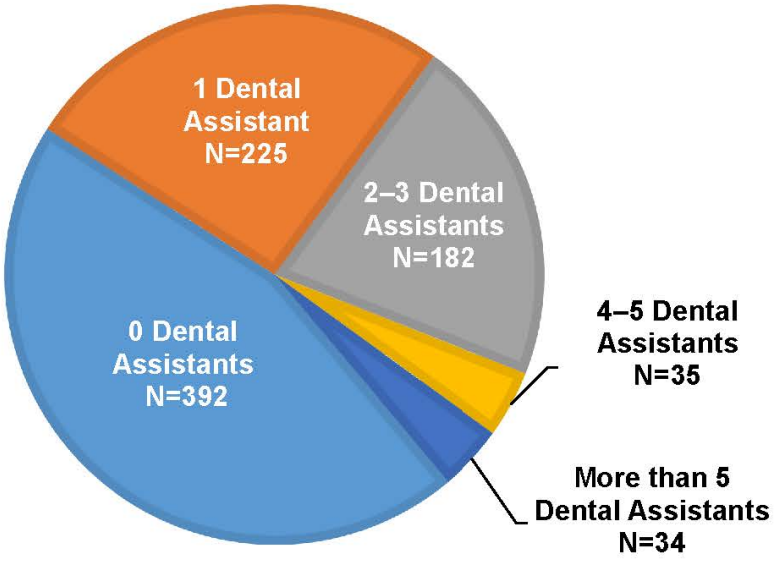


TABLE 10 – RESPONDENTS BY REGION

REGION NAME	NUMBER (N)	PERCENT*
Los Angeles County and Vicinity	168	19.3
San Francisco Bay Area	192	22.1
San Joaquin Valley	124	14.3
Sacramento Valley	73	8.4
San Diego County and Vicinity	95	10.9
Shasta/Cascade	20	2.3
Riverside and Vicinity	85	9.8
Sierra Mountain Valley	30	3.4
North Coast	37	4.3
South Coast and Central Coast	43	4.9
Total	867	100

*NOTE: Appendix A shows a more detailed breakdown of the frequencies by region.

CHAPTER 4 | DATA ANALYSIS AND RESULTS

RELIABILITY OF RATINGS

OPES evaluated the task and knowledge statement ratings obtained from the questionnaire respondents with a standard index of reliability, coefficient alpha (α), which ranges from 0 to 1. Coefficient alpha is an estimate of the internal consistency of the respondents' ratings of the tasks and knowledge statements. A higher coefficient value indicates more consistency between respondent ratings. Coefficients were calculated for all respondent ratings.

Table 11 displays the reliability coefficients for the task statement rating scale in each content area. The overall ratings of task frequency and task importance across content areas were highly reliable (Frequency α = .925; Importance α = .940). Table 12 displays the reliability coefficients for the knowledge statement rating scale in each content area. The overall ratings of knowledge importance across content areas were highly reliable (α = .985). These results indicate that the responding RDAs rated the tasks and knowledge statements consistently throughout the questionnaire.

TABLE 11 – TASK SCALE RELIABILITY

CONTENT AREA	NUMBER OF TASKS	α FREQUENCY	α IMPORTANCE
1. Assessment and Diagnostic Records	7	.703	.695
2. Dental Procedures	29	.919	.944
3. Infection Control and Health and Safety	9	.834	.812
4. Laws and Regulations	6	.724	.775
Overall	51	.925	.940

TABLE 12 – KNOWLEDGE SCALE RELIABILITY

CONTENT AREA	NUMBER OF KNOWLEDGE STATEMENTS	α IMPORTANCE
1. Assessment and Diagnostic Records	28	.949
2. Dental Procedures	76	.982
3. Infection Control and Health and Safety	24	.975
4. Laws and Regulations	10	.936
Overall	138	.985

TASK CRITICALITY INDICES

To calculate the criticality indices of the task statements, OPES test specialists used the following formula. For each respondent, OPES first multiplied the frequency rating (Fi) and the importance rating (Ii) for each task. Next, OPES averaged the multiplication products across respondents as shown below.

Task criticality index = mean [(Fi) X (Ii)]

The tasks were grouped by content area and sorted in descending order by their criticality index. The tasks included in the questionnaire, their mean frequency and importance ratings, and their associated criticality indices are Appendix B.

OPES test specialists convened a workshop consisting of 4 SMEs in February 2023. The purpose of this workshop was to identify the essential tasks and knowledge required for safe and competent RDA practice. The SMEs reviewed the mean frequency and importance ratings for each task and its criticality index to determine whether to establish a cutoff value below which tasks should be eliminated. Based on their review of the relative importance of tasks to RDA practice, the SMEs determined that no cutoff value should be set and that all the tasks should be retained.

KNOWLEDGE IMPORTANCE RATINGS

To determine the importance of each knowledge statement, the mean importance (K Imp) rating for each knowledge statement was calculated. The knowledge statements included in the questionnaire, sorted in descending order by content area, and presented along with their mean importance ratings, are Appendix C.

The SMEs who participated in the February 2023 workshop also reviewed the knowledge statement mean importance ratings. After reviewing the mean importance ratings and considering their relative importance to RDA practice, the SMEs determined that no cutoff value should be set, and that all knowledge statements should be retained.

TASK-KNOWLEDGE LINKAGE

The SMEs who participated in the February 2023 workshop then confirmed the final linkage of tasks and knowledge statements. The SMEs worked individually to verify that the knowledge statements linked to each task were critical to competent performance of that task.

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CHAPTER 5 | EXAMINATION OUTLINE

CONTENT AREAS AND WEIGHTS

The SMEs who participated in the February 2023 workshop were also asked to finalize the weights of the content areas that would form the Registered Dental Assistant Written Examination outline. OPES test specialists presented the SMEs with preliminary weights that had been calculated by dividing the sum of the criticality indices for the tasks in each content area by the overall sum of the criticality indices for all tasks, as shown below.

$$\frac{\text{Sum of Criticality Indices for Tasks in Content Area}}{\text{Sum of Criticality Indices for All Tasks}} = \text{Percent Weight of Content Area}$$

The SMEs evaluated the preliminary content area weights in terms of how well they reflected the relative importance of each content area to entry level RDA practice in California. Through discussion, the SMEs determined that adjustments to the preliminary weights were necessary to more accurately reflect the relative importance of each area to RDA practice. The content area weight for "Dental Procedures" increased, and the content area weight for "Laws and Regulations" decreased; the content area weights for "Assessment and Diagnostic Records" and "Infection Control and Health and Safety" remained the same. A summary of the preliminary and final content area weights for the RDA Written Examination outline is presented in Table 13.

TABLE 13 – CONTENT AREA WEIGHTS

CONTENT AREA	PRELIMINARY WEIGHTS	FINAL WEIGHTS
1. Assessment and Diagnostic Records	15%	15%
2. Dental Procedures	45%	50%
3. Infection Control and Health and Safety	25%	25%
4. Laws and Regulations	15%	10%
Total	100%	100%

The SMEs reviewed the content areas and wrote descriptions for each content area. They organized the tasks and knowledge statements into subareas within each content area and distributed the content area weight across the subareas. The content areas, subareas, and associated weights were then finalized and provide the basis for the California Registered Dental Assistant Examination outline. The final examination outline is presented in Table 14.

TABLE 14 – REGISTERED DENTAL ASSISTANT WRITTEN EXAMINATION OUTLINE

Content Area 1. ASSESSMENT AND DIAGNOSTIC RECORDS (15%). This area assesses the candidate's knowledge of reviewing information about a patient's history and oral conditions as they relate to dental treatment. This area also assesses the candidate's knowledge of assisting with diagnostic records and chart information related to dental treatment. These activities are performed under the supervision of a dentist.

Section	Tasks	Associated Knowledge Statements
1A. Patient Information and Assessment (8%)	T1. Review patient medical and dental history to identify conditions that may affect dental treatment.	K1. Knowledge of common medical conditions and medications that may affect treatment Knowledge of dental conditions that affect treatment. K2. Knowledge of types of oral health conditions that may affect treatment. K3. Knowledge of types of medical conditions that may require premedication for dental treatment. K4. Knowledge of the relationship between allergic reactions or sensitivities and dental materials. K5. Knowledge of methods for gathering information regarding patient medical and dental history.
	T2. Obtain patient's blood pressure and vital signs to determine current status.	K6. Knowledge of standards regarding blood pressure ranges based on patient age. K7. Knowledge of signs of elevated or dangerous blood pressure readings. K8. Knowledge of vital signs that should be obtained before treatment. K9. Knowledge of techniques for taking patient blood pressure and vitals.
	T3. Perform mouth mirror inspection of oral cavity to identify obvious lesions, existing restorations, and missing teeth.	K10. Knowledge of types of basic oral structures and dental anatomy. K11. Knowledge of types of occlusions and malocclusions. K12. Knowledge of signs of plaque, calculus, and stain formations in the oral cavity. K13. Knowledge of the effects of dietary habits on oral health. K14. Knowledge of effects of substance use on oral health. K15. Knowledge of the effects of smoking or tobacco use on oral health. K16. Knowledge of methods for performing mouth mirror inspections.

Content Area 1. ASSESSMENT AND DIAGNOSTIC RECORDS (15%), continued. This area assesses the candidate's knowledge of reviewing information about a patient's history and oral conditions as they relate to dental treatment. This area also assesses the candidate's knowledge of assisting with diagnostic records and chart information related to dental treatment. These activities are performed under the supervision of a dentist.

Section	Tasks	Associated Knowledge Statements
1B. Diagnostic Tests and Records (7%)	T4. Use caries detection materials and devices to gather information for dentist.	K17. Knowledge of types of devices and materials for detecting caries. K18. Knowledge of procedures for using caries detection devices and materials.
	T5. Obtain intraoral images of patient's mouth and dentition to be assist with milling of computer-aided design (CAD) restorations.	K19. Knowledge of techniques for taking intraoral diagnostic imaging. K20. Knowledge of techniques for patient management during imaging. K21. Knowledge of factors that impact digital imaging and quality.
	T6. Prepare patient for radiographs or cone-beam computed tomography (CBCT) to assist the dentist in determining oral conditions.	K22. Knowledge of types of radiographic imaging (i.e., panoramic, bitewing, FMX). K23. Knowledge of procedures for taking digital or conventional radiographs. K24. Knowledge of methods for patient management during radiograph procedures. K25. Knowledge of factors that impact radiographic imaging and quality.
	T7. Chart evaluation information to document oral conditions related to treatment.	K26. Knowledge of types of dental terminology and morphology. K27. Knowledge of universal numbering and Palmer quadrant notation systems. K28. Knowledge of methods for charting oral conditions.

Content Area 2. DENTAL PROCEDURES (50%). This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.

Section	Tasks	Knowledge Statements
2A. Treatment Preparation (15%)	T8. Identify types and stages of treatment to prepare for dental procedures.	K29. Knowledge of types and stages of dental treatment. K30. Knowledge of methods for preparing tray and equipment set-up for dental procedures. K31. Knowledge of types of materials used in dental procedures.
	T9. Prepare instruments to facilitate use in dental treatment.	K32. Knowledge of types of dental instruments and their associated uses. K33. Knowledge of methods for preparing, handling, and storing dental instruments.
	T10. Select components and materials to be used in dental treatment.	K34. Knowledge of types of dental components and their functions. K35. Knowledge of types of materials used in dental treatment and their functions. K36. Knowledge of methods for selecting dental components and materials.
	T11. Isolate oral cavity to preserve integrity of restorative area.	K37. Knowledge of types of materials used to isolate restorative area. K38. Knowledge of types of techniques for isolating restorative area. K39. Knowledge of methods for isolating tooth or cavity preparations.
	T12. Place bases and liners to reduce irritation and microleakage.	K40. Knowledge of types of base and liner materials and their uses. K41. Knowledge of procedures for applying or placing bases and liners.
	T13. Place matrices and wedges to create a seal and form contacts during restorative procedures.	K42. Knowledge of types of wedges and their uses. K43. Knowledge of techniques for placing wedges during restorative procedures. K44. Knowledge of types of matrix bands and their uses. K45. Knowledge of techniques for placing matrix bands during restorative procedures.

Content Area 2. DENTAL PROCEDURES (50%), continued. This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.

Section	Tasks	Knowledge Statements
2B. Direct and Indirect Restorations (10%)	T14. Place temporary filling material to protect tooth during transitional treatment.	K46. Knowledge of types of temporary filling materials and their uses. K47. Knowledge of techniques to mix, place, and contour temporary filing material.
	T15. Apply etchant to prepare tooth surface for direct and indirect restorations.	K48. Knowledge of types of etchants and their uses. K49. Knowledge of indications and contraindications for the use of etching agents. K50. Knowledge of techniques for applying etchants.
	T16. Place bonding agent to prepare tooth surface for restoration.	K51. Knowledge of types of bonding agents and their use. K52. Knowledge of indications and contraindications for the use of bonding agents. K53. Knowledge of techniques for applying bonding agents.
	T17. Fabricate indirect provisional restorations to protect tooth during restoration processes	K54. Knowledge of types of materials used for indirect provisional restorations. K55. Knowledge of techniques for fabricating indirect provisional restorations.
	T18. Adjust indirect provisional restorations to ensure proper fit.	K56. Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of indirect provisional restorations. K57. Knowledge of techniques for adjusting indirect provisional restorations.
	T19. Cement indirect provisional restorations to provide coverage of tooth preparation.	K58. Knowledge of types of cements and their use. K59. Knowledge of techniques for placing and removing indirect provisional restorations. K60. Knowledge of techniques for mixing provisional materials.
	T20. Place and adjust direct provisional restorations to ensure proper fit.	K61. Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of direct provisional restorations. K62. Knowledge of techniques for adjusting direct provisional restorations.
	T21. Finish direct provisional restorations to provide a smooth surface or prevent irritation.	K63. Knowledge of techniques for finishing direct provisional restorations. K64. Knowledge of the effects of improper or incomplete finishing of direct restorations.

T22. Remove excess cement from surfaces of teeth to prevent irritation.	K65. Knowledge of instruments used to remove cement from teeth surfaces. K66. Knowledge of signs of irritation associated with residual cement.
T23. Assist in the administration of nitrous oxide and oxygen to provide analgesia or sedation when ordered by a dentist.	K67. Knowledge of procedures for the use and care of equipment used to administer oxygen and nitrous oxide and oxygen. K68. Knowledge of signs of medical emergencies associated with the use of nitrous oxide.

Content Area 2. DENTAL PROCEDURES (50%), continued. This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.

Section	Tasks	Knowledge Statements
2C. Preventative and Aesthetic Procedures (10%)	T24. Perform coronal polishing to remove plaque and extrinsic stains from surfaces of teeth.	K69. Knowledge of techniques for performing coronal polishing. K70. Knowledge of indications and contraindications for performing coronal polishing.
	T25. Apply pit and fissure sealants to prevent dental caries.	K71. Knowledge of types of pit and fissure sealants and their uses. K72. Knowledge of factors that impact retention of pit and fissure sealants. K73. Knowledge of indications and contraindications for using pit and fissure sealants. K74. Knowledge of techniques for applying pit and fissure sealants.
	T26. Perform in-office bleaching to whiten teeth.	K75. Knowledge of types of bleaching agents and their use. K76. Knowledge of indications and contraindications for using bleaching agents. K77. Knowledge of techniques for applying bleaching agents.

Content Area 2. DENTAL PROCEDURES (50%), continued. This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.

Section	Tasks	Knowledge Statements
2D. Patient Education (10%)	T27. Educate patients about oral hygiene to promote dental health.	K78. Knowledge of the effects of poor oral hygiene and care related to dental health. K79. Knowledge of methods for educating patients about oral hygiene.
	T28. Provide patients with pre- and post-treatment instructions to promote patient compliance.	K80. Knowledge of symptoms patients may encounter after treatment. K81. Knowledge of techniques for pain management after treatment. K82. Knowledge of methods for educating patients about pre- and post-treatment instructions.
	T29. Educate patients about dietary recommendations to promote oral health.	K83. Knowledge of the effects of foods and beverages on oral health. K84. Knowledge of methods for educating patients about dietary recommendations related to oral health and dental treatment.

Content Area 2. DENTAL PROCEDURES (50%), continued. This area assesses the candidate's knowledge of providing registered dental assistant services related to patient treatment. This includes services related to placing direct and indirect provisional restorations, implementing preventative procedures, and performing tasks associated with specialty procedures. This area also assesses the candidate's knowledge of educating the patient about oral health and maintenance. These activities are performed under the supervision of a dentist.

Section	Tasks	Knowledge Statements
2E. Specialty Procedures (5%)	T30. Test pulp vitality to identify baseline pulp health or level of pain.	K85. Knowledge of the relationship between pain responses and pulp vitality. K86. Knowledge of methods for testing pulp vitality.
	T31. Dry canals with absorbent points to assist with endodontic treatment.	K87. Knowledge of techniques for using absorbent points to dry canals.
	T32. Place periodontal dressings to protect extraction and periodontal surgical sites.	K88. Knowledge of types of periodontal dressings and their use. K89. Knowledge of the relationship between dressing medicaments and post-surgical healing. K90. Knowledge of signs of dry socket that require the attention of a dentist. K91. Knowledge of signs of infection or irritation associated with periodontal and surgical dressings. K92. Knowledge of techniques for applying dressings to surgical sites.
	T33. Place archwires to move teeth to dentist's prescribed position.	K93. Knowledge of the types of archwires and their functions. K94. Knowledge of methods for placing archwires. K95. Knowledge of types of instruments used to place orthodontic archwires.
	T34. Place ligatures to connect archwires to orthodontic brackets.	K96. Knowledge of types of ligatures and their functions. K97. Knowledge of techniques for placing ligatures based on dentist's instructions. K98. Knowledge of types of instruments used to place orthodontic ligatures.
	T35. Remove post-extraction and post-surgical sutures as directed by dentist.	K99. Knowledge of techniques for removing post-surgical sutures.
	T36. Adjust removable prosthetic appliances extraorally to verify fit or retention.	K100. Knowledge of types of removable prosthetic appliances and their functions. K101. Knowledge of methods for verifying removable prosthetic appliance fit or retention. K102. Knowledge of techniques for adjusting prosthetic appliances extraorally.

Content Area 3. INFECTION CONTROL AND HEALTH AND SAFETY (25%). This area assesses the candidate's knowledge of maintaining a safe and sanitary work environment and to adhere to infection control protocols and standard precautions.

Section	Tasks	Associated Knowledge Statements
3A. Patient Safety and Prevention of Disease Transmission (15%)	T37. Provide patient with safety precautions to ensure protection during dental treatment.	K103. Knowledge of methods for using safety precautions with patients. K104. Knowledge of types of safety equipment for protecting patients. K105. Knowledge of techniques for protecting patients during diagnostic tests and imaging.
	T38. Use pre-procedural barriers, air evacuation systems, and rinse techniques to prevent the spread of disease through aerosol, droplets, and splatter.	K106. Knowledge of equipment for providing protective barriers and air evacuation systems. K107. Knowledge of techniques for using barriers, air evacuation systems, and rinses. K108. Knowledge of types of infectious diseases and their modes of transmission.
	T39. Sanitize hands according to protocols to prevent the transmission of diseases.	K109. Knowledge of techniques for sanitizing hands during dental treatments. K108. Knowledge of types of infectious diseases and their modes of transmission.
	T40. Wear personal protective equipment to prevent contamination.	K110. Knowledge of techniques for using personal protective equipment. K108. Knowledge of types of infectious diseases and their modes of transmission.
	T41. Adhere to infectious disease prevention protocols to reduce risk of disease transmission.	K111. Knowledge of techniques for preventing the spread of infectious diseases. K112. Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious diseases. K108. Knowledge of types of infectious diseases and their modes of transmission.
	T42. Identify signs of medical emergencies to address situations that require immediate intervention.	K113. Knowledge of signs of allergic reaction or anaphylactic shock. K114. Knowledge of signs of medical crisis or emergency. K115. Knowledge of methods for obtaining emergency medical assistance. K116. Knowledge of methods for administering emergency first aid and CPR.

Content Area 3. INFECTION CONTROL AND HEALTH AND SAFETY (25%), continued. This area assesses the candidate's knowledge of maintaining a safe and sanitary work environment and to adhere to infection control protocols and standard precautions.

Section	Tasks	Associated Knowledge Statements
3B. Equipment Disinfection and Cross-Contamination Prevention (10%)	T43. Disinfect treatment area and equipment to prepare for or complete dental treatment.	K117. Knowledge of methods for disinfecting treatment areas and equipment. K118. Knowledge of barrier techniques for protecting treatment areas and equipment. K119. Knowledge of methods for monitoring dental waterlines and water quality. K120. Knowledge of methods for disinfecting evacuation lines. K121. Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious diseases.
	T44. Sterilize instruments to prevent patient-to-patient disease transmission.	K122. Knowledge of types of sterilization processes and related equipment. K123. Knowledge of procedures for sterilizing instruments. K124. Knowledge of techniques for storing instruments before and after sterilization.
	T45. Adhere to disposal safety protocols to discard of contaminated materials or sharps.	K125. Knowledge of techniques for the safe disposal of contaminated materials. K126. Knowledge of techniques for the safe disposal of sharps.

Content Area 4. LAWS AND REGULATIONS (10%). This area assesses the candidate's knowledge of laws and regulations regarding licensing requirements, scope of practice, professional conduct, and professional responsibilities.

Tasks	Associated Knowledge Statements
T46. Comply with laws regarding consent to respect patients' right to make informed treatment decisions.	K127. Knowledge of laws regarding patient consent.
T47. Comply with Health Insurance Portability and Accountability Act (HIPAA) laws to respect patient right to privacy in dental health care delivery.	K128. Knowledge of laws related to the Health Insurance Portability and Accountability Act (HIPAA).
T48. Report instances of suspected abuse, neglect, and exploitation to protect vulnerable populations.	K129. Knowledge of signs of child abuse or neglect. K130. Knowledge of signs of dependent adult abuse, neglect, or exploitation. K131. Knowledge of signs of elder adult abuse, neglect, or exploitation. K132. Knowledge of methods for reporting child, elder, or dependent adult abuse.
T49. Comply with laws about record-keeping to document, store, and dispose of patient charts or records.	K133. Knowledge of legal standards for patient record-keeping and documentation. K134. Knowledge of laws regarding the storage and disposal of patient charts or records.
T50. Comply with laws about professional conduct to maintain professional integrity.	K135. Knowledge of laws regarding professional conduct.
T51. Comply with laws about scope of practice to maintain professional boundaries.	K136. Knowledge of laws regarding scope of practice.

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CHAPTER 6 | CONCLUSION

The OA of the RDA profession described in this report provides a comprehensive description of current practice in California. The procedures employed to perform the OA were based upon a content validation strategy to ensure that the results accurately represent RDA practice. Results of this OA provide information regarding current practice that can be used to develop valid and legally defensible examinations and to make job-related decisions regarding occupational licensure.

Use of the California Registered Dental Assistant Written Examination outline contained in this report ensures that the Board is compliant with BPC § 139.

This report provides all documentation necessary to verify that the analysis has been completed in accordance with legal, professional, and technical standards.

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APPENDIX A | RESPONDENTS BY REGION

LOS ANGELES COUNTY AND VICINITY

County of Practice	Frequency
Los Angeles	115
Orange	53
TOTAL	168

NORTH COAST

County of Practice	Frequency
Del Norte	2
Humboldt	6
Mendocino	4
Sonoma	25
TOTAL	37

RIVERSIDE AND VICINITY

County of Practice	Frequency
Riverside	53
San Bernardino	32
TOTAL	85

SACRAMENTO VALLEY

County of Practice	Frequency
Butte	15
Colusa	0
Glenn	0
Lake	1
Sacramento	46
Sutter	2
Yolo	7
Yuba	2
TOTAL	73

SAN DIEGO COUNTY AND VICINITY

County of Practice	Frequency
Imperial	2
San Diego	93
TOTAL	95

SAN FRANCISCO BAY AREA

County of Practice	Frequency
Alameda	36
Contra Costa	21
Marin	9
Napa	8
San Francisco	37
San Mateo	18
Santa Clara	48
Santa Cruz	8
Solano	7
TOTAL	192

SAN JOAQUIN VALLEY

County of Practice	Frequency
Fresno	38
Kern	17
Kings	4
Madera	3
Merced	7
San Joaquin	28
Stanislaus	14
Tulare	13
TOTAL	124

SHASTA-CASCADE

County of Practice	Frequency
Lassen	3
Plumas	1
Shasta	11
Siskiyou	2
Tehama	3
Trinity	0
TOTAL	20

SIERRA MOUNTAIN VALLEY

County of Practice	Frequency
Alpine	0
Amador	1
Calaveras	1
El Dorado	8
Inyo	0
Mariposa	0
Nevada	4
Placer	11
Sierra	0
Tuolumne	5
TOTAL	30

SOUTH COAST AND CENTRAL COAST

County of Practice	Frequency
Monterey	7
San Benito	0
San Luis Obispo	5
Santa Barbara	16
Ventura	15
TOTAL	43

APPENDIX B | CRITICALITY INDICES FOR ALL TASKS BY CONTENT AREA

Content Area 1: Assessment and Diagnostic Records

Task Number	Tasks	Mean Frequency	Mean Importance	Task Criticality Index
T1.	Review patient medical and dental history to identify conditions that may affect dental treatment.	5.29	5.54	30.14
T6.	Prepare patient for radiographs or cone-beam computed tomography (CBCT) to assist the dentist in determining oral conditions.	5.19	5.34	29.41
T7.	Chart evaluation information to document oral conditions related to treatment.	5.19	5.38	29.20
T3.	Perform mouth-mirror inspection of oral cavity to identify obvious lesions, existing restorations, and missing teeth.	4.32	4.73	22.41
T2.	Obtain patient's blood pressure and vital signs to determine current status.	4.26	4.71	22.30
T5.	Obtain intraoral images of patient's mouth and dentition to assist with milling of computer-aided design (CAD) restorations.	3.69	3.99	18.95
T4.	Use caries detection materials and devices to gather information for dentist.	2.81	3.39	12.52

Content Area 2: Dental Procedures

Task Number	Tasks	Mean Importance	Mean Frequency	Task Criticality Index
T9.	Prepare instruments to facilitate use in dental treatment.	5.66	5.64	32.20
T28.	Provide patients with pre- and post-treatment instructions to promote patient compliance.	5.38	5.44	29.95
T10.	Select components and materials to be used in dental treatment.	5.31	5.39	29.54
T27.	Educate patients about oral hygiene to promote dental health.	5.23	5.38	29.00
T8.	Identify types and stages of treatment to prepare for dental procedures.	5.07	5.17	27.48
T29.	Educate patients about dietary recommendations to promote oral health.	4.45	4.84	23.39
T11.	Isolate oral cavity to preserve integrity of restorative area.	4.27	4.83	23.27
T24.	Perform coronal polishing to remove plaque and extrinsic stains from surfaces of teeth.	4.42	4.76	23.12
T22.	Remove excess cement from surfaces of teeth to prevent irritation.	4.02	4.74	22.14
T17.	Fabricate indirect provisional restorations to protect tooth during restoration processes.	3.56	4.33	19.14
T19.	Cement indirect provisional restorations to provide coverage of tooth preparation.	3.52	4.32	18.92
T18.	Adjust indirect provisional restorations to ensure proper fit.	3.45	4.29	18.49
T15.	Apply etchant to prepare tooth surface for direct and indirect restorations.	3.17	4.16	16.58

Content Area 2: Dental Procedures (continued)

Task Number	Tasks	Mean Importance	Mean Frequency	Task Criticality Index
T25.	Apply pit and fissure sealants to prevent dental caries.	3.15	4.09	16.32
T20.	Place and adjust direct provisional restorations to ensure proper fit.	2.99	3.97	15.68
T13.	Place matrices and wedges to create a seal and form contacts during restorative procedures.	2.94	4.10	15.38
T21.	Finish direct provisional restorations to provide a smooth surface and prevent irritation.	2.92	3.92	15.35
T16.	Place bonding agent to prepare tooth surface for restoration	2.88	4.01	15.26
T14.	Place temporary filling material to protect tooth during transitional treatment.	2.99	3.94	14.58
T12.	Place bases and liners to reduce irritation and micro-leakage.	2.67	3.83	13.34
T23.	Assist in the administration of nitrous oxide and oxygen to provide analgesia or sedation when ordered by a dentist.	2.68	3.79	13.33
T35.	Remove post-extraction and post-surgical sutures as directed by dentist.	2.44	3.57	11.42
T36.	Adjust removable prosthetic appliances extraorally to verify fit or retention.	2.37	3.58	11.48
T30.	Test pulp vitality to identify baseline pulp health or level of pain.	2.06	3.35	9.29
T26.	Perform in-office bleaching to whiten teeth.	2.27	2.84	9.02

T33.	Place archwires to move teeth to dentist's prescribed position.	1.94	2.89	8.65
T34.	Place ligatures to connect archwires to orthodontic brackets.	1.93	2.86	8.64
T31.	Dry canals with absorbent points to assist with endodontic treatment.	1.86	3.25	8.38
T32.	Place periodontal dressings to protect extraction and periodontal surgical sites.	1.80	3.04	7.70

Content Area 3: Infection Control and Health and Safety

Task Number	Tasks	Mean Importance	Mean Frequency	Task Criticality Index
T40.	Wear personal protective equipment to prevent contamination.	5.84	5.89	34.52
T44.	Sterilize instruments to prevent patient-to-patient disease transmission.	5.78	5.93	34.42
T43.	Disinfect treatment area and equipment to prepare for or complete dental treatment.	5.82	5.89	34.38
T39.	Sanitize hands according to protocols to prevent the transmission of diseases.	5.83	5.87	34.35
T41.	Adhere to infectious disease prevention protocols to reduce risk of disease transmission.	5.80	5.86	34.29
T45.	Adhere to disposal safety protocols to discard of contaminated materials or sharps.	5.79	5.89	34.25
T38.	Use pre-procedural barriers, air evacuation systems, and rinse techniques to prevent the spread of disease through aerosol, droplets, and splatter.	5.63	5.70	32.59
T37.	Provide patient with safety precautions to ensure protection during dental treatment.	5.36	5.50	30.20
T42.	Identify signs of medical emergencies to address situations that require immediate intervention.	4.80	5.62	27.85

Content Area 4: Laws and Regulations

Task Number	Task Statement	Mean Importance	Mean Frequency	Task Criticality Index
T47.	Comply with Health Insurance Portability and Accountability Act (HIPAA) regulations to provide services that protects patients' private health information.	5.64	5.73	32.82
T46.	Comply with laws about consent to respect patients' right to make informed treatment decisions.	5.62	5.70	32.54
T50.	Comply with laws about professional conduct to maintain professional integrity.	5.60	5.69	32.24
T51.	Comply with laws about scope of practice to maintain professional boundaries.	5.59	5.68	32.08
T49.	Comply with laws about record-keeping to document, store, and dispose of patient charts and records.	5.29	5.57	30.55
T48.	Report instances of suspected abuse, neglect, and exploitation to protect vulnerable populations.	3.26	5.40	18.59

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APPENDIX C | KNOWLEDGE STATEMENT MEAN IMPORTANCE RATINGS BY CONTENT AREA

Content Area 1: Assessment and Diagnostic Records

Knowledge Number	Knowledge Statement	Importance
K3.	Knowledge of types of medical conditions that may require premedication for dental treatment.	4.5403
K4.	Knowledge of the relationship between allergic reactions or sensitivities and dental materials.	4.5368
K5.	Knowledge of methods for gathering information about patient medical and dental history.	4.4598
K23.	Knowledge of procedures for taking digital or conventional radiographs.	4.4217
K1.	Knowledge of common medical conditions and medications that may affect treatment.	4.3521
K25.	Knowledge of factors that impact radiographic imaging and quality.	4.3383
K24.	Knowledge of methods for patient management during radiograph procedures.	4.3379
K10.	Knowledge of types of basic oral structures and dental anatomy.	4.3303
K22.	Knowledge of types of radiographic imaging.	4.326
K2.	Knowledge of types of oral health conditions that may affect treatment.	4.3149
K28.	Knowledge of methods for charting oral conditions.	4.2995
K26.	Knowledge of types of dental terminology and morphology.	4.2846
K7.	Knowledge of signs of elevated or dangerous blood pressure readings.	4.2454
K19.	Knowledge of techniques for taking intraoral diagnostic imaging.	4.2287
K20.	Knowledge of techniques for patient management during imaging.	4.2258
K21.	Knowledge of factors that impact digital imaging and quality.	4.2206

Content Area 1: Assessment and Diagnostic Records (continued)

Knowledge Number	Knowledge Statement	Importance
K12.	Knowledge of signs of plaque, calculus, and stain formations in the oral cavity.	4.1325
K27.	Knowledge of universal numbering and Palmer quadrant notation systems.	4.105
K9.	Knowledge of techniques for taking patient blood pressure and vitals.	4.0403
K6.	Knowledge of standards regarding blood pressure ranges based on patient age.	4.0345
K8.	Knowledge of vital signs that should be collected before treatment.	4.0126
K14.	Knowledge of the effects of substance use on oral health.	3.9586
K16.	Knowledge of methods for performing mouth-mirror inspections.	3.947
K13.	Knowledge of the effects of dietary habits on oral health.	3.9251
K15.	Knowledge of the effects of smoking or tobacco use on oral health.	3.9138
K11.	Knowledge of types of occlusions and malocclusions.	3.7724
K17.	Knowledge of types of materials and devices for detecting caries.	3.4044
K18.	Knowledge of procedures for using caries detection materials and devices.	3.2673

Content Area 2: Dental Procedures

Knowledge Number	Knowledge Statement	Importance
K105.	Knowledge of methods for using safety precautions with patients.	4.6813
K33.	Knowledge of methods for preparing, handling, and storing dental instruments.	4.5322
K30.	Knowledge of methods for preparing tray and equipment set-up for dental procedures.	4.4511
K32.	Knowledge of types of dental instruments and their associated uses.	4.4388
K31.	Knowledge of types of materials used in dental procedures.	4.432
K84.	Knowledge of methods for educating patients about pre- and post-treatment instructions.	4.4069
K82.	Knowledge of symptoms patients may encounter after treatment.	4.3661
K35.	Knowledge of types of materials used in dental treatment and their functions.	4.3475
K80.	Knowledge of the effects of poor oral hygiene and care related to dental health.	4.3383
K81.	Knowledge of methods for educating patients about oral hygiene.	4.3383
K34.	Knowledge of types of dental components and their functions.	4.3184
K83.	Knowledge of techniques for pain management after treatment.	4.2839
K29.	Knowledge of types and stages of dental treatment.	4.2184
K36.	Knowledge of methods for selecting dental components and materials.	4.2106
K71.	Knowledge of techniques for performing coronal polishing.	4.1371
K85.	Knowledge of the effects of foods and beverages on oral health.	4.107
K70.	Knowledge of risks associated with improper coronal polishing.	4.1001

Content Area 2: Dental Procedures (continued)

Knowledge Number	Knowledge Statement	Importance
K72.	Knowledge of indications and contraindications for performing coronal polishing.	4.0995
K37.	Knowledge of types of materials used to isolate restorative area.	4.0242
K67.	Knowledge of signs of irritation associated with residual cement.	4.0185
K66.	Knowledge of instruments used to remove cement from teeth surfaces.	4.0173
K86.	Knowledge of methods for educating patients about dietary recommendations related to oral health and dental treatment.	4.0104
K58.	Knowledge of types of cements and their use.	3.9966
K38.	Knowledge of types of techniques for isolating restorative area.	3.9724
K65.	Knowledge of techniques for removing cement from teeth surfaces and gingiva.	3.9596
K48.	Knowledge of types of etchants and their uses.	3.9563
K51.	Knowledge of types of bonding agents and their uses.	3.9551
K49.	Knowledge of indications and contraindications for the use of etching agents.	3.947
K39.	Knowledge of methods for isolating tooth or cavity preparations.	3.9412
K50.	Knowledge of techniques for applying etchants.	3.923
K52.	Knowledge of indications and contraindications for the use of bonding agents.	3.8917
K60.	Knowledge of techniques for mixing provisional materials.	3.8902
K53.	Knowledge of techniques for applying bonding agents.	3.8194
K56.	Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of indirect provisional restorations.	3.7154
K40.	Knowledge of types of base and liner materials and their uses.	3.7085
K44.	Knowledge of types of matrix bands and their uses.	3.6843

Content Area 2: Dental Procedures (continued)

Knowledge Number	Knowledge Statement	Importance
K74.	Knowledge of factors that impact retention of pit and fissure sealants.	3.6644
K46.	Knowledge of types of temporary filling materials and their uses.	3.6459
K76.	Knowledge of techniques for applying pit and fissure sealants.	3.6417
K75.	Knowledge of indications and contraindications for using pit and fissure sealants.	3.6394
K69.	Knowledge of signs of medical emergencies associated with the use of nitrous oxide.	3.6382
K47.	Knowledge of techniques to mix, place, and contour temporary filing material.	3.6374
K55.	Knowledge of techniques for fabricating indirect provisional restorations.	3.6282
K59.	Knowledge of techniques for placing and removing indirect provisional restorations.	3.6189
K73.	Knowledge of types of pit and fissure sealants and their uses.	3.6132
K57.	Knowledge of techniques for adjusting indirect provisional restorations.	3.609
K54.	Knowledge of types of materials used for indirect provisional restorations.	3.6071
K61.	Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of direct provisional restorations	3.591
K42.	Knowledge of types of wedges and their uses.	3.5899
K92.	Knowledge of signs of dry socket that require the attention of a dentist.	3.5823
K41.	Knowledge of procedures for applying or placing bases and liners.	3.5449
K45.	Knowledge of techniques for placing matrix bands during restorative procedures.	3.5346
K68.	Knowledge of procedures for the use and care of equipment used to administer oxygen and nitrous oxide.	3.5219
K87.	Knowledge of the relationship between pain responses and pulp vitality.	3.5218

K64.	Knowledge of the effects of improper or incomplete finishing of direct restorations.	3.4867
K43.	Knowledge of techniques for placing wedges during restorative procedures.	3.4689

Content Area 2: Dental Procedures (continued)

Knowledge Number	Knowledge Statement	Importance
K62.	Knowledge of techniques for adjusting direct provisional restorations.	3.4025
K78.	Knowledge of indications and contraindications for using bleaching agents.	3.3779
K63.	Knowledge of techniques for finishing direct provisional restorations.	3.3702
K102.	Knowledge of types of removable prosthetic appliances and their functions.	3.3537
K79.	Knowledge of techniques for applying bleaching agents.	3.3449
K77.	Knowledge of types of bleaching agents and their uses.	3.3102
K103.	Knowledge of methods for verifying removable prosthetic appliance fit or retention.	3.2111
K88.	Knowledge of methods for testing pulp vitality.	3.1905
K93.	Knowledge of signs of infection or irritation associated with periodontal and surgical dressings.	3.1038
K101.	Knowledge of techniques for removing post-surgical sutures.	3.0634
K104.	Knowledge of techniques for adjusting prosthetic appliances extraorally.	3.0473
K91.	Knowledge of the relationship between dressing medicaments and post-surgical healing.	2.8857
K89.	Knowledge of techniques for using absorbent points to dry canals.	2.8422
K94.	Knowledge of techniques for applying dressings to surgical sites.	2.8397
K90.	Knowledge of types of periodontal dressings and their uses.	2.6178
K95.	Knowledge of the types of archwires and their functions.	2.4412
K96.	Knowledge of methods for placing archwires.	2.4129

K97.	Knowledge of types of instruments used to place orthodontic archwires.	2.4046
K99.	Knowledge of techniques for placing ligatures based on dentist's instructions.	2.4007
K100.	Knowledge of types of instruments used to place orthodontic ligatures.	2.3956
K98.	Knowledge of types of ligatures and their functions.	2.391

Content Area 3: Infection Control and Health and Safety

Knowledge Number	Knowledge Statement	Importance
K113.	Knowledge of techniques for preventing the spread of infectious diseases.	4.8062
K114.	Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious diseases.	4.7829
K118.	Knowledge of methods for administering emergency first aid and CPR.	4.7829
K125.	Knowledge of procedures for sterilizing instruments.	4.7783
K128.	Knowledge of techniques for the safe disposal of sharps.	4.7746
K119.	Knowledge of methods for disinfecting treatment areas and equipment.	4.7699
K123.	Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious diseases.	4.7564
K112.	Knowledge of techniques for using personal protective equipment.	4.7514
K127.	Knowledge of techniques for the safe disposal of contaminated materials.	4.7503
K117.	Knowledge of methods for obtaining emergency medical assistance.	4.739
K124.	Knowledge of types of sterilization processes and related equipment.	4.7344
K111.	Knowledge of techniques for sanitizing hands during dental treatments.	4.7249
K116.	Knowledge of signs of medical crisis or emergency.	4.7232
K126.	Knowledge of techniques for storing instruments before and after sterilization.	4.7225
K120.	Knowledge of barrier techniques for protecting treatment areas and equipment.	4.7171

Content Area 3: Infection Control and Health and Safety (continued)

Knowledge Number	Knowledge Statement	Importance
K110.	Knowledge of types of infectious diseases and their modes of transmission.	4.6933
K115.	Knowledge of signs of allergic reaction or anaphylactic shock.	4.6848
K106.	Knowledge of types of safety equipment for protecting patients.	4.6724
K122.	Knowledge of methods for disinfecting evacuation lines.	4.6713
K121.	Knowledge of methods for monitoring dental waterlines and water quality.	4.6362
K107.	Knowledge of techniques for protecting patients during diagnostic tests and imaging.	4.6286
K109.	Knowledge of techniques for using barriers, air evacuation systems, and rinses.	4.6062
K108.	Knowledge of equipment for providing protective barriers and air evacuation systems.	4.5965
K129.	Knowledge of laws regarding patient consent.	4.5294

Content Area 4: Laws and Regulations

Knowledge Number	Knowledge Statement	Importance
K137.	Knowledge of laws regarding professional conduct.	4.5517
K138.	Knowledge of laws regarding scope of practice.	4.5218
K130.	Knowledge of laws related to the Health Insurance Portability and Accountability Act (HIPAA).	4.5184
K135.	Knowledge of legal standards for patient record-keeping and documentation.	4.5138
K131.	Knowledge of signs of child abuse or neglect.	4.4407
K134.	Knowledge of methods for reporting child, elder, or dependent adult abuse.	4.4299
K132.	Knowledge of signs of dependent adult abuse, neglect, or exploitation.	4.3786
K136.	Knowledge of laws about the storage and disposal of patient charts and records.	4.3713
K133.	Knowledge of signs of elder adult abuse, neglect, or exploitation.	4.3191

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APPENDIX D | EMAIL INVITATION TO PRACTITIONERS

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2023

Dear Registered Dental Assistants:

Thank you for opening this online survey. You have been selected to participate in a study of the RDA profession by the Dental Board of California (DBC). The DBC is collecting information on the tasks performed by RDAs in California, the importance of the tasks, and the knowledge needed to perform the tasks safely and effectively. We will use this information to ensure that RDA licensing examinations reflect current practice in California.

We worked with a group of RDAs to develop a survey to capture this information. The survey should take less than an hour to complete.

For your convenience, you do not have to complete the survey in a single session. You can resume where you stopped as long as you reopen the survey from the same computer and use the same web browser. Before you exit, complete the page that you are on. The program will save responses only on completed pages. The weblink is available 24 hours a day, 7 days a week.

Your responses will be kept confidential. They will not be tied to your license or personal information. Individual responses will be combined with responses from other RDAs, and only group data will be analyzed.

If you have any questions or need assistance with the survey, please contact [redacted] with the Office of Professional Examination Services at [redacted]

To begin the survey, click "Next". Please submit the completed survey by Friday, January 20, 2023.

We welcome your feedback and appreciate your time!

Thank you!

Dental Board of California

Begin Survey

APPENDIX E | QUESTIONNAIRE

STATE OF CALIFORNIA
DEPARTMENT OF CONSUMER AFFAIRS

BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY • GAVIN NEWSOM, GOVERNOR
DENTAL BOARD OF CALIFORNIA
2005 Evergreen Street, Suite 1550, Sacramento, CA 95815
P (916) 263-2300 F (916) 263-2140 | www.dbc.ca.gov

Dear RDA:

We are conducting an occupational analysis (OA) of the Registered Dental Assistant (RDA) profession in California. An OA is a comprehensive study of a profession. Using this survey, the Board will identify the tasks currently performed by licensed professionals, the importance of those tasks, and the knowledge required to perform them safely and competently.

With your help, the Board is surveying licensed RDA professionals who collectively represent the profession based on their geographic location, years of experience, and practice specialty.

The results of the OA will be used to update the description of practice that provides the basis for the California Registered Dental Assistant Written Examination.

The survey was developed by test specialists from the Office of Professional Examination Services (OPES) with the participation of licensed RDA professionals serving as subject matter experts (SMEs).

This survey does not need to be completed in a single session. You can exit the survey at any time and return to it later without losing your responses as long as you access the survey from the same computer using the same browser. The survey will save responses only from fully completed pages; responses to items on partially completed pages will not be saved.

We understand that your time is valuable. The survey is available online 24/7 and you can complete it at any time before the deadline of **January 20, 2023**.

If you need assistance, please contact [redacted] at [redacted]@dca.ca.gov.

We value your contribution and appreciate your time!

Respectfully,

Tracy Montez

Tracy Montez, Ph.D.
Executive Officer

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

2. Part I - Personal Data

Complete this survey only if you currently hold a license and are working as a Registered Dental Assistant (RDA) in California.

The DBC recognizes that every RDA may not perform all of the tasks and use all of the knowledge contained in this survey. However, your participation is essential to the success of this study, and your contributions will help establish standards for safe and effective RDA practice in the State of California.

The information you provide here is voluntary and confidential. It will be treated as personal information subject to the Information Practices Act (Civil Code section 1798 et seq.) and will be used only for the purpose of analyzing the data from this survey to generate a demographic profile of RDAs practicing in California.

*** 1. Are you currently licensed and practicing as a Registered Dental Assistant (RDA) in California?**

- ◯ Yes
- ◯ No

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

3. Part I - Personal Data

2. How long have you held an RDA license in California?

- ◯ Fewer than 12 months
- ◯ 1–5 years
- ◯ 6–10 years
- ◯ 11–15 years
- ◯ 16–20 years
- ◯ More than 20 years

3. How long did you work as an unlicensed dental assistant before obtaining your RDA license?

- ◯ Not applicable (N/A)
- ◯ Fewer than 12 months
- ◯ 1–5 years
- ◯ 6–10 years
- ◯ 11–15 years
- ◯ 16–20 years
- ◯ More than 20 years

4. Which of the following licenses or certificates do you possess in addition to your RDA license? (Select all that apply.)

- [ ] Not applicable (N/A)
- [ ] Coronal Polishing Certificate
- [ ] Dental Sedation Assistant Permit
- [ ] Orthodontic Assistant Permit
- [ ] Pit and Fissure Sealants Certificate
- [ ] Ultrasonic Scaling Certificate
- [ ] Radiation Safety Certificate

>

- [ ] Other (please specify)

5. How would you describe your primary work setting?

- ◯ Private dental practice with one dentist
- ◯ Private dental practice with two or more dentists
- ◯ Specialty dental practice (i.e., oral surgery, orthodontics, endodontics)
- ◯ Public health dentistry
- ◯ Dental school clinic
- ◯ Military

>

- ◯ Other (please specify)

6. How would you describe the dental practice in your primary work setting?

- ◯ General dentistry
- ◯ Orthodontic Dentistry
- ◯ Endodontic dentistry
- ◯ Periodontic dentistry
- ◯ Pedodontic dentistry
- ◯ Prosthodontic dentistry
- ◯ Oral surgery

>

- ◯ Other (please specify)

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

4. Part I - Personal Data

7. How many unlicensed dental assistants work in your primary work setting?

- ◯ 0
- ◯ 1
- ◯ 2–3
- ◯ 4–5
- ◯ More than 5

8. How many other licensed RDAs work in your primary work setting (not including yourself)?

- ◯ 0
- ◯ 1
- ◯ 2–3
- ◯ 4–5
- ◯ More than 5

9. How many licensed RDAEFs work in your primary work setting?

- ◯ 0
- ◯ 1
- ◯ 2–3
- ◯ 4–5
- ◯ More than 5

10. What is the population of the location of your primary work setting?

- ◯ Urban (more than 50,000)
- ◯ Rural (fewer than 50,000)

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

5. Part I - Personal Data

11. In what California county do you perform the majority of your work?

- Alameda
- Alpine
- Amador
- Butte
- Calaveras
- Colusa
- Contra Costa
- Del Norte
- El Dorado
- Fresno
- Glenn
- Humboldt
- Imperial
- Inyo
- Kern
- Kings
- Lake
- Lassen
- Los Angeles
- Madera
- Marin
- Mariposa
- Mendocino
- Merced
- Modoc
- Mono
- Monterey
- Napa
- Nevada
- Orange
- Placer
- Plumas
- Riverside
- Sacramento
- San Benito
- San Bernardino
- San Diego
- San Francisco
- San Joaquin
- San Luis Obispo
- San Mateo
- Santa Barbara
- Santa Clara
- Santa Cruz
- Shasta
- Sierra
- Siskiyou
- Solano
- Sonoma
- Stanislaus
- Sutter
- Tehama
- Trinity
- Tulare
- Tuolumne
- Ventura
- Yolo
- Yuba

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

6. Part II - Task Ratings

INSTRUCTIONS FOR RATING TASK STATEMENTS

In this part of the questionnaire you will be presented with 51 task statements. Please rate each task as it relates to your current practice as an RDA using the **Frequency** and **Importance** scales displayed below. Your frequency and importance ratings should be separate and independent ratings. Therefore, the ratings you assign using one rating scale should not influence the ratings that you assign using the other rating scale.

If the task is NOT a part of your current practice, rate the task as "0" (zero) frequency and "0" (zero) importance.

The boxes for rating the frequency and importance of each task have drop-down lists. Click on the "down" arrow for each list to see the rating, and then select the value based on your current practice.

FREQUENCY RATING SCALE

HOW OFTEN are these tasks performed in your current practice? Use the following scale to make your ratings.

0 - DOES NOT APPLY. I do not perform this task in my current practice.

1 - RARELY. This task is one of the tasks I perform least often in my current practice relative to other tasks I perform.

2 - SELDOM. I perform this task less often than most to other tasks I perform in my current practice.

3 - REGULARLY. I perform this task as often as other tasks I perform in my current practice.

4 - OFTEN. I perform this task more often than most other tasks I perform in my current practice.

5 - VERY OFTEN. This task is one of the tasks I perform most often in my current practice relative to other tasks I perform.

IMPORTANCE RATING SCALE

HOW IMPORTANT are these tasks for effective performance of your current practice? Use the following scale to make your ratings.

0 - NOT IMPORTANT; DOES NOT APPLY TO MY PRACTICE. This task is not important to my current practice; I do not perform this task in my current practice.

1 - OF MINOR IMPORTANCE. This task is of minor importance relative to other tasks; it has the lowest priority of all the tasks I perform in my current practice.

2 - FAIRLY IMPORTANT. This task is fairly important for effective performance relative to other tasks; however, it does not have the priority of most other tasks I perform in my current practice.

3 - MODERATELY IMPORTANT. This task is moderately important for effective performance relative to other tasks; it has average priority of all the tasks I perform in my current practice.

4 - VERY IMPORTANT. This task is very important for effective performance relative to other tasks; it has a higher degree of priority than most other tasks I perform in my current practice.

5 - CRITICALLY IMPORTANT. This task is one of the most critical tasks I perform relative to other tasks; it has the highest degree of priority of all the tasks I perform in my current practice.

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

7. Part II - Task Ratings

12. Please rate the following tasks based on how often you perform the task (Frequency) and how important the task is for effective performance of your current practice (Importance).

Content Area 1. Assessment and Diagnostic Records

	Frequency	Importance
T1. Review patient medical and dental history to identify conditions that may affect dental treatment.		
T2. Obtain patient's blood pressure and vital signs to determine current status.		
T3. Perform mouth-mirror inspection of oral cavity to identify obvious lesions, existing restorations, and missing teeth.		
T4. Use caries detection materials and devices to gather information for dentist.		
T5. Obtain intraoral images of patient's mouth and dentition to assist with milling of computer-aided design (CAD) restorations.		
T6. Prepare patient for radiographs or cone-beam computed tomography (CBCT) to assist the dentist in determining oral conditions.		
T7. Chart evaluation information to document oral conditions related to treatment.		

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

8. Part II - Task Ratings

13. Please rate the following tasks based on how often you perform the task (Frequency) and how important the task is for effective performance of your current practice (Importance).

Content Area 2. Dental Procedures

	Frequency	Importance
T8. Identify types and stages of treatment to prepare for dental procedures.		
T9. Prepare instruments to facilitate use in dental treatment.		
T10. Select components and materials to be used in dental treatment.		
T11. Isolate oral cavity to preserve integrity of restorative area.		
T12. Place bases and liners to reduce irritation and micro-leakage.		
T13. Place matrices and wedges to create a seal and form contacts during restorative procedures.		
T14. Place temporary filling material to protect tooth during transitional treatment.		
T15. Apply etchant to prepare tooth surface for direct and indirect restorations.		
T16. Place bonding agent to prepare tooth surface for restoration.		
T17. Fabricate indirect provisional restorations to protect tooth during restoration processes.		
T18. Adjust indirect provisional restorations to ensure proper fit.		
T19. Cement indirect provisional restorations to provide coverage of tooth preparation.		
T20. Place and adjust direct provisional restorations to ensure proper fit.		
T21. Finish direct provisional restorations to provide a smooth surface and prevent irritation.		
T22. Remove excess cement from surfaces of teeth to prevent irritation.		

T23. Assist in the administration of nitrous oxide and oxygen to provide analgesia or sedation when ordered by a dentist.		
T24. Perform coronal polishing to remove plaque and extrinsic stains from surfaces of teeth.		
T25. Apply pit and fissure sealants to prevent dental caries.		
T26. Perform in-office bleaching to whiten teeth.		
T27. Educate patients about oral hygiene to promote dental health.		
T28. Provide patients with pre- and post-treatment instructions to promote patient compliance.		
T29. Educate patients about dietary recommendations to promote oral health.		
T30. Test pulp vitality to identify baseline pulp health or level of pain.		
T31. Dry canals with absorbent points to assist with endodontic treatment.		
T32. Place periodontal dressings to protect extraction and periodontal surgical sites.		
T33. Place archwires to move teeth to dentist's prescribed position.		
T34. Place ligatures to connect archwires to orthodontic brackets.		
T35. Remove post-extraction and post-surgical sutures as directed by dentist.		
T36. Adjust removable prosthetic appliances extraorally to verify fit or retention.		

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

9. Part II - Task Ratings

14. Please rate the following tasks based on how often you perform the task (Frequency) and how important the task is for effective performance of your current practice (Importance).

Content Area 3. Infection Control and Health and Safety

	Frequency	Importance
T37. Provide patient with safety precautions to ensure protection during dental treatment.		
T38. Use pre-procedural barriers, air evacuation systems, and rinse techniques to prevent the spread of disease through aerosol, droplets, and splatter.		
T39. Sanitize hands according to protocols to prevent the transmission of diseases.		
T40. Wear personal protective equipment to prevent contamination.		
T41. Adhere to infectious disease prevention protocols to reduce risk of disease transmission.		
T42. Identify signs of medical emergencies to address situations that require immediate intervention.		
T43. Disinfect treatment area and equipment to prepare for or complete dental treatment.		
T44. Sterilize instruments to prevent patient-to-patient disease transmission.		
T45. Adhere to disposal safety protocols to discard contaminated materials or sharps.		

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

10. Part II - Task Ratings

15. Please rate the following tasks based on how often you perform the task (Frequency) and how important the task is for effective performance of your current practice (Importance).

Content Area 4. Laws and Regulations

	Frequency	Importance
T46. Comply with laws about consent to respect patients' right to make informed treatment decisions.		
T47. Comply with Health Insurance Portability and Accountability Act (HIPAA) regulations to provide services that protects patients' private health information.		
T48. Report instances of suspected abuse, neglect, and exploitation to protect vulnerable populations.		
T49. Comply with laws about record-keeping to document, store, and dispose of patient charts and records.		
T50. Comply with laws about professional conduct to maintain professional integrity.		
T51. Comply with laws about scope of practice to maintain professional boundaries.		

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

11. Part III - Knowledge Ratings

INSTRUCTIONS FOR RATING KNOWLEDGE STATEMENTS

In this part of the questionnaire, you will be presented with 138 knowledge statements. Please rate each knowledge statement based on how important you believe that knowledge is to the effective performance of tasks in your current practice as an RDA.

If the knowledge does **NOT** apply to your current practice, rate the statement as "0" (zero) importance and go on to the next statement.

Please use the following importance scale to rate the knowledge statements:

IMPORTANCE SCALE

HOW IMPORTANT is this knowledge for effective performance of tasks in your current practice?

0 - NOT IMPORTANT; NOT REQUIRED. This knowledge does not apply to my current practice; it is not required for effective performance.

1 - OF MINOR IMPORTANCE. This knowledge is of minor importance for effective performance; it is useful for some relatively minor parts of my current practice.

2 - FAIRLY IMPORTANT. This knowledge is fairly important for effective performance in some relatively major parts of my current practice.

3 - MODERATELY IMPORTANT. This knowledge is moderately important for effective performance in some relatively major parts of my current practice.

4 - VERY IMPORTANT. This knowledge is very important for effective performance of tasks in my current practice.

5 - CRITICALLY IMPORTANT. This knowledge is critically important for effective performance of tasks in my current practice.

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

12. Part III - Knowledge Ratings

16. How important is this knowledge for effective performance of tasks in your current practice?

Content Area 1. Assessment and Diagnostic Records

	Not important, not required	Of minor importance	Fairly important	Moderately important	Very important	Critically important
K1. Knowledge of common medical conditions and medications that may affect treatment.	○	○	○	○	○	○
K2. Knowledge of types of oral health conditions that may affect treatment.	○	○	○	○	○	○
K3. Knowledge of types of medical conditions that may require premedication for dental treatment.	○	○	○	○	○	○
K4. Knowledge of the relationship between allergic reactions or sensitivities and dental materials.	○	○	○	○	○	○
K5. Knowledge of methods for gathering information about patient medical and dental history.	○	○	○	○	○	○
K6. Knowledge of standards regarding blood pressure ranges based on patient age.	○	○	○	○	○	○
K7. Knowledge of signs of elevated or dangerous blood pressure readings.	○	○	○	○	○	○
K8. Knowledge of vital signs that should be collected before treatment.	○	○	○	○	○	○
K9. Knowledge of techniques for taking patient blood pressure and vitals.	○	○	○	○	○	○
K10. Knowledge of types of basic oral structures and dental anatomy.	○	○	○	○	○	○
K11. Knowledge of types of occlusions and malocclusions.	○	○	○	○	○	○

K12. Knowledge of signs of plaque, calculus, and stain formations in the oral cavity.	○	○	○	○	○	○
K13. Knowledge of the effects of dietary habits on oral health.	○	○	○	○	○	○
K14. Knowledge of the effects of substance use on oral health.	○	○	○	○	○	○
K15. Knowledge of the effects of smoking or tobacco use on oral health.	○	○	○	○	○	○
K16. Knowledge of methods for performing mouth-mirror inspections.	○	○	○	○	○	○
K17. Knowledge of types of materials and devices for detecting caries.	○	○	○	○	○	○
K18. Knowledge of procedures for using caries detection materials and devices.	○	○	○	○	○	○
K19. Knowledge of techniques for taking intraoral diagnostic imaging.	○	○	○	○	○	○
K20. Knowledge of techniques for patient management during imaging.	○	○	○	○	○	○
K21. Knowledge of factors that impact digital imaging and quality.	○	○	○	○	○	○
K22. Knowledge of types of radiographic imaging.	○	○	○	○	○	○
K23. Knowledge of procedures for taking digital or conventional radiographs.	○	○	○	○	○	○
K24. Knowledge of methods for patient management during radiograph procedures.	○	○	○	○	○	○
K25. Knowledge of factors that impact radiographic imaging and quality.	○	○	○	○	○	○
K26. Knowledge of types of dental terminology and morphology.	○	○	○	○	○	○
K27. Knowledge of universal numbering and Palmer quadrant notation systems.	○	○	○	○	○	○
K28. Knowledge of methods for charting oral conditions.	○	○	○	○	○	○

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

13. Part III - Knowledge Ratings

17. How important is this knowledge for effective performance of tasks in your current practice?

Content Area 2. Dental Procedures

	Not important; not required	Of minor importance	Fairly important	Moderately important	Very important	Critically important
K29. Knowledge of types and stages of dental treatment.	○	○	○	○	○	○
K30. Knowledge of methods for preparing tray and equipment set-up for dental procedures.	○	○	○	○	○	○
K31. Knowledge of types of materials used in dental procedures.	○	○	○	○	○	○
K32. Knowledge of types of dental instruments and their associated uses.	○	○	○	○	○	○
K33. Knowledge of methods for preparing, handling, and storing dental instruments.	○	○	○	○	○	○
K34. Knowledge of types of dental components and their functions.	○	○	○	○	○	○
K35. Knowledge of types of materials used in dental treatment and their functions.	○	○	○	○	○	○
K36. Knowledge of methods for selecting dental components and materials.	○	○	○	○	○	○
K37. Knowledge of types of materials used to isolate restorative area.	○	○	○	○	○	○
K38. Knowledge of types of techniques for isolating restorative area.	○	○	○	○	○	○
K39. Knowledge of methods for isolating tooth or cavity preparations.	○	○	○	○	○	○

K40. Knowledge of types of base and liner materials and their uses.	○	○	○	○	○	○
K41. Knowledge of procedures for applying or placing bases and liners.	○	○	○	○	○	○
K42. Knowledge of types of wedges and their uses.	○	○	○	○	○	○
K43. Knowledge of techniques for placing wedges during restorative procedures.	○	○	○	○	○	○
K44. Knowledge of types of matrix bands and their uses.	○	○	○	○	○	○
K45. Knowledge of techniques for placing matrix bands during restorative procedures.	○	○	○	○	○	○
K46. Knowledge of types of temporary filling materials and their uses.	○	○	○	○	○	○
K47. Knowledge of techniques to mix, place, and contour temporary filing material.	○	○	○	○	○	○
K48. Knowledge of types of etchants and their uses.	○	○	○	○	○	○
K49. Knowledge of indications and contraindications for the use of etching agents.	○	○	○	○	○	○
K50. Knowledge of techniques for applying etchants.	○	○	○	○	○	○
K51. Knowledge of types of bonding agents and their use.	○	○	○	○	○	○
K52. Knowledge of indications and contraindications for the use of bonding agents.	○	○	○	○	○	○
K53. Knowledge of techniques for applying bonding agents.	○	○	○	○	○	○
K54. Knowledge of types of materials used for indirect provisional restorations.	○	○	○	○	○	○
K55. Knowledge of techniques for fabricating indirect provisional restorations.	○	○	○	○	○	○
K56. Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of indirect provisional restorations.	○	○	○	○	○	○
K57. Knowledge of techniques for adjusting indirect provisional restorations.	○	○	○	○	○	○
K58. Knowledge of types of cements	○	○	○	○	○	○

and their use.						
K59. Knowledge of techniques for placing and removing indirect provisional restorations.	○	○	○	○	○	○
K60. Knowledge of techniques for mixing provisional materials.	○	○	○	○	○	○
K61. Knowledge of methods for evaluating occlusion, margins, and contact discrepancies of direct provisional restorations	○	○	○	○	○	○
K62. Knowledge of techniques for adjusting direct provisional restorations.	○	○	○	○	○	○
K63. Knowledge of techniques for finishing direct provisional restorations.	○	○	○	○	○	○
K64. Knowledge of the effects of improper or incomplete finishing of direct restorations.	○	○	○	○	○	○
K65. Knowledge of techniques for removing cement from teeth surfaces and gingiva.	○	○	○	○	○	○
K66. Knowledge of instruments used to remove cement from teeth surfaces.	○	○	○	○	○	○
K67. Knowledge of signs of irritation associated with residual cement.	○	○	○	○	○	○
K68. Knowledge of procedures for the use and care of equipment used to administer oxygen and nitrous oxide and oxygen.	○	○	○	○	○	○
K69. Knowledge of signs of medical emergencies associated with the use of nitrous oxide.	○	○	○	○	○	○
K70. Knowledge of risks associated with improper coronal polishing.	○	○	○	○	○	○
K71. Knowledge of techniques for performing coronal polishing.	○	○	○	○	○	○
K72. Knowledge of indications and contraindications for performing coronal polishing.	○	○	○	○	○	○
K73. Knowledge of types of pit and fissure sealants and their uses.	○	○	○	○	○	○
K74. Knowledge of factors that impact retention of pit and fissure sealants.	○	○	○	○	○	○
K75. Knowledge of indications and contraindications for using pit and fissure sealants.	○	○	○	○	○	○
K76. Knowledge of techniques for	○	○	○	○	○	○

applying pit and fissure sealants.						
K77. Knowledge of types of bleaching agents and their use.	○	○	○	○	○	○
K78. Knowledge of indications and contraindications for using bleaching agents.	○	○	○	○	○	○
K79. Knowledge of techniques for applying bleaching agents.	○	○	○	○	○	○
K80. Knowledge of the effects of poor oral hygiene and care related to dental health.	○	○	○	○	○	○
K81. Knowledge of methods for educating patients about oral hygiene.	○	○	○	○	○	○
K82. Knowledge of symptoms patients may encounter after treatment.	○	○	○	○	○	○
K83. Knowledge of techniques for pain management after treatment.	○	○	○	○	○	○
K84. Knowledge of methods for educating patients about pre- and post-treatment instructions.	○	○	○	○	○	○
K85. Knowledge of the effects of foods and beverages on oral health.	○	○	○	○	○	○
K86. Knowledge of methods for educating patients about dietary recommendations related to oral health and dental treatment.	○	○	○	○	○	○
K87. Knowledge of the relationship between pain responses and pulp vitality.	○	○	○	○	○	○
K88. Knowledge of methods for testing pulp vitality.	○	○	○	○	○	○
K89. Knowledge of techniques for using absorbent points to dry canals.	○	○	○	○	○	○
K90. Knowledge of types of periodontal dressings and their use.	○	○	○	○	○	○
K91. Knowledge of the relationship between dressing medicaments and post-surgical healing.	○	○	○	○	○	○
K92. Knowledge of signs of dry socket that require the attention of a dentist.	○	○	○	○	○	○
K93. Knowledge of signs of infection or irritation associated with periodontal and surgical dressings.	○	○	○	○	○	○
K94. Knowledge of techniques for applying dressings to surgical sites.	○	○	○	○	○	○
K95. Knowledge of the types of archwires and their functions.	○	○	○	○	○	○

K96. Knowledge of methods for placing archwires.	○	○	○	○	○	○
K97. Knowledge of types of instruments used to place orthodontic archwires.	○	○	○	○	○	○
K98. Knowledge of types of ligatures and their functions.	○	○	○	○	○	○
K99. Knowledge of techniques for placing ligatures based on dentist's instructions.	○	○	○	○	○	○
K100. Knowledge of types of instruments used to place orthodontic ligatures.	○	○	○	○	○	○
K101. Knowledge of techniques for removing post-surgical sutures.	○	○	○	○	○	○
K102. Knowledge of types of removable prosthetic appliances and their functions.	○	○	○	○	○	○
K103. Knowledge of methods for verifying removable prosthetic appliance fit or retention.	○	○	○	○	○	○
K104. Knowledge of techniques for adjusting prosthetic appliances extraorally.	○	○	○	○	○	○

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

14. Part III - Knowledge Ratings

18. How important is this knowledge for effective performance of tasks in your current practice?

Content Area 3. Infection Control and Health and Safety

	Not important; not required	Of minor importance	Fairly important	Moderately important	Very important	Critically important
K105. Knowledge of methods for using safety precautions with patients.	○	○	○	○	○	○
K106. Knowledge of types of safety equipment for protecting patients.	○	○	○	○	○	○
K107. Knowledge of techniques for protecting patients during diagnostic tests and imaging.	○	○	○	○	○	○
K108. Knowledge of equipment for providing protective barriers and air evacuation systems.	○	○	○	○	○	○
K109. Knowledge of techniques for using barriers, air evacuation systems, and rinses.	○	○	○	○	○	○
K110. Knowledge of types of infectious diseases and their modes of transmission.	○	○	○	○	○	○
K111. Knowledge of techniques for sanitizing hands during dental treatments.	○	○	○	○	○	○
K112. Knowledge of techniques for using personal protective equipment.	○	○	○	○	○	○
K113. Knowledge of techniques for preventing the spread of infectious diseases.	○	○	○	○	○	○
K114. Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious	○	○	○	○	○	○

diseases.						
K115. Knowledge of signs of allergic reaction or anaphylactic shock.	○	○	○	○	○	○
K116. Knowledge of signs of medical crisis or emergency.	○	○	○	○	○	○
K117. Knowledge of methods for obtaining emergency medical assistance.	○	○	○	○	○	○
K118. Knowledge of methods for administering emergency first aid and CPR.	○	○	○	○	○	○
K119. Knowledge of methods for disinfecting treatment areas and equipment.	○	○	○	○	○	○
K120. Knowledge of barrier techniques for protecting treatment areas and equipment.	○	○	○	○	○	○
K121. Knowledge of methods for monitoring dental waterlines and water quality.	○	○	○	○	○	○
K122. Knowledge of methods for disinfecting evacuation lines.	○	○	○	○	○	○
K123. Knowledge of types of disinfecting and sterilizing agents used to prevent the spread of infectious diseases.	○	○	○	○	○	○
K124. Knowledge of types of sterilization processes and related equipment.	○	○	○	○	○	○
K125. Knowledge of procedures for sterilizing instruments.	○	○	○	○	○	○
K126. Knowledge of techniques for storing instruments before and after sterilization.	○	○	○	○	○	○
K127. Knowledge of techniques for the safe disposal of contaminated materials.	○	○	○	○	○	○
K128. Knowledge of techniques for the safe disposal of sharps.	○	○	○	○	○	○

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

15. Part III - Knowledge Ratings

19. How important is this knowledge for effective performance of tasks in your current practice?

Content Area 4. Laws and Regulations

	Not important; not required	Of minor importance	Fairly important	Moderately important	Very important	Critically important
K129. Knowledge of laws regarding patient consent.	○	○	○	○	○	○
K130. Knowledge of laws related to the Health Insurance Portability and Accountability Act (HIPAA).	○	○	○	○	○	○
K131. Knowledge of signs of child abuse or neglect.	○	○	○	○	○	○
K132. Knowledge of signs of dependent adult abuse, neglect, or exploitation.	○	○	○	○	○	○
K133. Knowledge of signs of elder adult abuse, neglect, or exploitation.	○	○	○	○	○	○
K134. Knowledge of methods for reporting child, elder, or dependent adult abuse.	○	○	○	○	○	○
K135. Knowledge of legal standards for patient record-keeping and documentation.	○	○	○	○	○	○
K136. Knowledge of laws about the storage and disposal of patient charts and records.	○	○	○	○	○	○
K137. Knowledge of laws regarding professional conduct.	○	○	○	○	○	○
K138. Knowledge of laws regarding scope of practice.	○	○	○	○	○	○

REGISTERED DENTAL ASSISTANT OCCUPATIONAL ANALYSIS SURVEY 2022

16. Thank you!

Thank you for taking the time to complete this survey. The Dental Board of California (DBC) values your contribution to this study.

REVIEW OF THE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS INTEGRATED NATIONAL BOARD DENTAL EXAMINATION

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

DENTAL BOARD OF CALIFORNIA

REVIEW OF THE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS INTEGRATED NATIONAL BOARD DENTAL EXAMINATION

June 2023

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

Robert Calvert, Ph.D., Research Data Specialist II
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OFFICE OF PROFESSIONAL EXAMINATION SERVICES

This report is mandated by California Business and Professions Code (BPC) § 139 and by DCA *Licensure Examination Validation Policy OPES 22-01*.

EXECUTIVE SUMMARY

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs used in California licensure comply with psychometric and legal standards. To become a licensed dentist in California, a candidate must have the requisite education and experience and pass the following three examinations:

1. Integrated National Board Dental Examination (INBDE)
2. American Board of Dental Examiners (ADEX)
3. California Dentist Law and Ethics Examination (LEX)

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Integrated National Board Dental Examination (INBDE), which is developed by the Joint Commission on National Dental Examinations (JCNDE) and administered by Prometric Inc. OPES performed this review to evaluate the suitability of the examination for use in California licensure of dentists. The examination is used by all 50 states and some territories.

The INBDE requires candidates to demonstrate the knowledge necessary to practice dentistry safely and within the dentistry scope of practice. JCNDE has researched and validated the examination to ensure that the competencies required for entry level practice are measured.

OPES, in collaboration with the Board, received and reviewed a report provided by JCNDE. The report included information on the occupational analysis (OA) conducted in 2016 addressing the practices and procedures used to develop and validate the INBDE. In addition, OPES reviewed other reports and documents provided by JCNDE. OPES performed a comprehensive evaluation of the documents to determine whether the following INBDE components met professional guidelines and technical standards: (a) OA, (b) examination development and scoring, (c) passing scores and passing rates, (d) test administration and score reporting, and (e) test security procedures. Follow-up emails were also exchanged with JCNDE representatives to clarify processes.

OPES found that the procedures used to establish and support the validity and defensibility of the components listed above appear to meet professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing* (*2014 Standards*) and in California Business and Professions (BPC) § 139. However, to fully comply with BPC § 139 and related *DCA Policy OPES 20-01 Participation in Examination Development Workshops* (*Policy OPES 20-01*), OPES recommends phasing out the service of instructors in examination development processes.

In addition to reviewing documents provided by JCNDE, OPES convened a linkage workshop of licensed California dentists in January 2023. The dentists served as subject matter experts (SMEs) to review the content of the INBDE. The SMEs were selected to represent the profession in terms of geographic location and experience. The purpose of the review was to link the INBDE content outline with the California description of practice that resulted from the *Occupational Analysis of the Dentist Profession in California* conducted by OPES in 2018 (*2018 California OA*). During this workshop, the SMEs linked the tasks and knowledge statements from the California description of practice to the content outline of the INBDE

The results of the linkage study indicated that the content of the INBDE adequately assesses the knowledge required for competent entry level practice of dentists in California. The INBDE did not assess practical demonstration of skills and California-specific laws and ethical guidelines.

Given the findings, OPES supports the Board's continued use of the INBDE, in addition to the ADEX and LEX, for licensure in California.

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CHAPTER 1 | INTRODUCTION

PURPOSE OF THE COMPREHENSIVE REVIEW

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) must ensure that examination programs used in California licensure comply with psychometric and legal standards. The public must be reasonably confident that an individual passing a licensure examination has the requisite knowledge and skills to practice safely and competently in California.

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Integrated National Board Dental Examination (INBDE) developed and administered by the Joint Commission on National Dental Examinations (JCNDE).

The INBDE is a multiple-choice national examination that measures a candidate's clinical knowledge associated with entry level dental practice. The INBDE stated purpose is to measure the "candidate's ability to apply knowledge of biomedical, clinical, and behavioral sciences along with cognitive skills to understand and solve problems in clinical and professional contexts." The INBDE is administered over two days and is ten and a half hours long. There are 400 scorable items and 100 pretest items. The examination is administered in six 105-minute sections to allow candidates breaks between sections based in 10 foundation knowledge areas.

The OPES review had three purposes:

1. To evaluate the suitability of the INBDE for continued use in California.
2. To determine whether the INBDE meets the professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing* (*2014 Standards*) and in California Business and Professions Code (BPC) § 139.
3. To identify any areas of California practice that the INBDE does not assess.

OPES recognizes that evaluating the suitability of the INBDE involves complex analysis. As noted in the *Standards* (p. 7):

> Evaluating the acceptability of a test does not rest on the literal satisfaction of every standard … and the acceptability of a test or test

> application cannot be determined by using a checklist. Specific circumstances affect the importance of individual standards, and individual standards should not be considered in isolation. Therefore, evaluating acceptability depends on (a) professional judgment that is based on a knowledge of behavioral science, psychometrics, and the relevant standards in the professional field to which the test applies; (b) the degree to which the intent of the standard has been satisfied by the test developer and user; (c) the alternative measurement devices that are readily available; (d) research and experiential evidence regarding the feasibility of meeting the standard; and (e) applicable laws and regulations.

OPES, in collaboration with the Board, requested documentation from JCNDE to determine whether the following examination program components met professional guidelines and technical standards outlined in the *2014 Standards* and BPC § 139: (a) occupational analysis (OA),[1] (b) examination development and scoring, (c) passing scores[2] and passing rates, (d) test administration and score reporting, and (e) test security procedures.

OPES' evaluation of INBDE is based solely on its review of the documentation provided by JCNDE. OPES did not seek to independently verify the claims and statements made by JCNDE.

CALIFORNIA LAW AND POLICY

BPC § 139 states:

> The Legislature finds and declares that occupational analyses and examination validation studies are fundamental components of licensure programs.

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[1] An occupational analysis is also known as a job analysis, practice analysis, or task analysis. For clarity and consistency, this report uses the term "occupational analysis" to refer to the type of analysis that supports the claim that an examination assesses the skills and knowledge required for safe and effective practice at entry level (*Standards*).

[2] A passing score is also known as a pass point or cut score.

BPC § 139 further requires that DCA develop a policy to address the minimum requirements for psychometrically sound examination validation, examination development, and OAs, including standards for the review of state and national examinations.

DCA *Policy 22-01 Examination Validation* (*Policy OPES 22-01*) specifies the *2014 Standards* as the most relevant technical and professional standards to be followed to ensure that examinations used for licensure in California are psychometrically sound, job-related, and legally defensible.

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CHAPTER 2 | OCCUPATIONAL ANALYSIS

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE INBDE Technical Report* and the additional information provided by JCNDE.

OCCUPATIONAL ANALYSIS STANDARDS

The following standard is most relevant to conducting OAs for licensure examinations, as referenced in the *2014 Standards*:

> **Standard 11.13**
>
> The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale and evidence should be provided to support the claim that the knowledge or skills being assessed are required for credential-worthy performance in that occupation and are consistent with the purpose for which the credentialing program was instituted (pp. 181–182).

The comment to Standard 11.13 emphasizes its relevance:

> **Comment**: Typically, some form of job or practice analysis provides the primary basis for defining the content domain. If the same examination is used in the credentialing of people employed in a variety of settings and specialties, a number of different job settings may need to be analyzed. Although the job analysis techniques may be similar to those used in employment testing, the emphasis for credentialing is limited appropriately to knowledge and skills necessary for effective practice (p. 182).
>
> In tests used for licensure, knowledge and skills that may be important to success but are not directly related to the purpose of licensure (i.e., protecting the public) should not be included (p. 182).

BPC § 139 requires that each California licensure board, bureau, and program report annually on the frequency of its OA and the validation and development of its examinations. *Policy OPES 22-01* states:

> Generally, an occupational analysis and examination outline should be updated every five years to be considered current; however, many factors are taken into consideration when determining the need for a different interval. For instance, an occupational analysis and examination outline/description of practice must be updated whenever there are significant changes in a profession's job tasks and/or demands, scope of practice, equipment, technology, required knowledge, skills and abilities, or law and regulations governing the profession (p. 4).

OCCUPATIONAL ANALYSIS DESCRIPTION, PURPOSE, AND TIME FRAME

In 2016, JCNDE began an OA of the dentistry profession, and the results were documented in the *INBDE Technical Report (2021 INBDE Technical Report)*. Additional information about this study was obtained through documentation provided by JCNDE, from JCNDE's website, and through email communication with JCNDE representatives.

The purpose of the 2016 OA was to define the practice of dentists in terms of the tasks performed by entry level practitioners and the associated knowledge needed to perform those tasks. JCNDE began by reviewing references and researching the competencies required for dentists. JCNDE uses a broad and comprehensive model whereby content domains are periodically updated. JCNDE is in the process of developing a new set of tasks and knowledge statements.

JCNDE began developing its Domain of Dentistry in 2010. The process was facilitated by psychometricians and involved dentists serving as subject matter experts (SMEs). The SMEs were carefully selected by JCNDE based on their professional and industry experience, background, and geographic location.

In 2011, JCNDE established statements describing the major tasks and activities required for the safe, independent practice of dentistry by entry level practitioners, across all areas of general practice in the dental clinic, with 10 foundation knowledge areas. Two separate panels comprised of 7 and 18 SMEs, respectively, were convened to evaluate the clinical content areas. The first group was selected for their expertise in specific content areas, while the second group was comprised of all dentists with exactly 5 years of experience. Both of the panels' evaluations supported the use of the 65 clinical content areas and foundation knowledge areas.

In 2015, JCNDE convened a new SME panel to reevaluate the statements developed in 2011. This panel revised the 65 statements, resulting in 56 clinical content areas. A survey was then sent to 2,219 dentists of which 166 responded. The results supported the 56 clinical content areas, and they were subsequently finalized.

Finding 1: The most recent development of tasks and knowledge was completed in 2016. The timeframe for the development of tasks and knowledge is considered to be current and legally defensible. JCNDE is currently working on a new occupational analysis, and they expect to finalize it in 2024.

OCCUPATIONAL ANALYSIS SURVEYS, SAMPLING PLAN AND RESPONSE RATE

JCNDE sent surveys throughout the process to SMEs evaluating the content areas as they moved through the development cycle. These surveys evaluated the frequency and importance of each content area as it relates to the field of dentistry.

In 2011, JCNDE sent a survey to dentists to gather feedback on the 65 content areas developed by the JCNDE. More than 700 dentists responded to the survey. A statistical model was applied to the importance and frequency results and supported the use of all 65 content areas.

In subsequent reviews between 2011 and 2016, the 65 content areas were narrowed down to 56. A new survey for the 56 content areas was sent to 2,219 dentists of which 166 individuals responded. This survey gathered feedback on the relevance and comprehensiveness of the revised list. The survey results supported the change to 56 content areas.

In 2016, JCNDE sent a survey to 34,441 dentists with 10 or less years of experience. The survey evaluated the 56 clinical content areas with respect to importance and frequency. The survey was completed by 4,431 dentists. California practitioners accounted for approximately 9% of the respondents.

Finding 2: The procedures used by JCNDE to develop the surveys and periodically update the content areas are generally consistent with professional guidelines and technical standards.

Recommendation 1: OPES recommends that JCNDE include practitioners licensed 5 years or less in subsequent OA development processes.

Recommendation 2: OPES recommends that JCNDE increase the frequency with which it conducts its OA. *Policy OPES 22-01* specifies that an OA should be conducted every 5 years.

OCCUPATIONAL ANALYSIS – DEVELOPMENT OF EXAMINATION OUTLINE

The process of examination development and the development of tasks and knowledge statements is continuous for the INBDE. At each phase of development, SMEs are encouraged to critically evaluate the examination outline for areas that are not addressed or are addressed and should not be. Though this evaluation is ongoing, it does not result in a large number of substantive changes due to the stability of the scope of skill and knowledge required for the safe and effective practice of dentistry.

In 2010, the JCNDE developed 65 statements that describe the major tasks and activities required for the safe, independent practice of dentistry by entry level practitioners, across all areas of general practice in the dental clinic. These clinical content areas were formulated and adapted based on competencies and standards presented in previous reports. The initial statements were subsequently evaluated and revised with the input of SMEs. The resulting 56 content areas were then evaluated by a survey of dentists regarding their importance and frequency.

Finding 3: The processes used to establish a link between tasks and knowledge identified by the OA as required for entry level practice and the examination outline demonstrate a minimum level of validity.

CONCLUSIONS

The OA and the development of the test specifications for the INBDE, based on the results of the most recent OA, appear consistent with professional guidelines and technical standards. OPES recommends that the OA committee take steps to include SMEs who represent the practice in terms of all experience levels. Because the results of the OA form the basis of the INBDE, entry level practitioners (licensed 5 years or less) should be involved in these processes.

CHAPTER 3 | EXAMINATION DEVELOPMENT AND SCORING

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE INBDE Technical Report* and the additional information provided by JCNDE.

EXAMINATION DEVELOPMENT STANDARDS

Examination development includes many steps, from the development of an examination content outline to scoring and analyzing items after the administration of an examination. Several specific activities involved in the examination development process are evaluated in this section. The activities include developing examination content, linking examination content to the examination outline, and development of the scoring criteria and the examination forms.

The following standards are most relevant to examination development for licensure examinations, as referenced in the *2014 Standards*.

Standard 2.3

For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported (p. 43).

Standard 4.7

The procedures used to develop, review, and try out items and to select items from the item pool should be documented (p. 87).

Standard 4.10

When a test developer evaluates the psychometric properties of items, the model used for that purpose (e.g., classical test theory, item response theory, or another model) should be documented. The sample used for estimating item properties should be described and should be of adequate size and diversity for the procedure. The process by which items are screened and the data used for screening, such as item difficulty, item discrimination, or differential item functioning (DIF) for major examinee groups, should also be documented. When model-based methods (e.g., IRT) are used to estimate item parameters in test

development, the item response model, estimation procedures, and evidence of model fit should be documented (pp. 88–89).

Standard 4.12

Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications (p. 89).

Standard 4.20

The process for selecting, training, qualifying, and monitoring scorers should be specified by the test developer. The training materials, such as the scoring rubrics and examples of test takers' responses that illustrate the levels on the rubric score scale, and the procedures for training scorers should result in a degree of accuracy and agreement among scorers that allows the scores to be interpreted as originally intended by the test developer. Specifications should also describe processes for assessing scorer consistency and potential drift over time in raters' scoring (p. 92).

Standard 4.21

When test users are responsible for scoring and scoring requires scorer judgment, the test user is responsible for providing adequate training and instruction to the scorers and for examining scorer agreement and accuracy. The test developer should document the expected level of scorer agreement and accuracy and should provide as much technical guidance as possible to aid test users in satisfying this standard (p. 92).

The following regulations are relevant to the integrity of the examination development process:

BPC § 139 requires DCA to develop a policy on examination validation which includes minimum requirements for psychometrically sound examination development.

DCA Policy OPES 20-01 Participation in Examination Development Workshops (Policy OPES 20-01), as mandated by BPC § 139, specifies that board members, committee members, and instructors should not serve as expert consultants in the licensure examination development process. This is due to potential conflict of interest, undue influence, and security considerations.

EXAMINATION DEVELOPMENT – PARTICIPATION OF SUBJECT MATTER EXPERTS

Examination development for the INBDE is performed by SMEs who serve on the Examination Review Committees for JCNDE's theory examinations. SMEs were carefully selected by JCNDE based on their professional and industry experience and background. Each writing and review panel has 16 SMEs. The group is made up of specialists in different domains of dentistry. Each subgroup has between 5 and 6 SMEs. One SME in each group is a general dentist and the remainder are experts in prescribed foundation knowledge areas. JCNDE allows educators to participate in examination development. All SMEs who participate in examination development are required to sign JCNDE's security agreement.

> **Finding 4**: The criteria used to select SMEs appear relatively consistent with professional guidelines and technical standards. However, including the service of educators in examination development processes is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139.
>
> **Recommendation 3**: To be fully compliant with *Policy OPES 20-01*, OPES recommends phasing out or limiting the service of educators during examination development processes.

EXAMINATION DEVELOPMENT – LINKAGE TO EXAMINATION CONTENT OUTLINES

All items are linked to the examination content outlines by a panel of SMEs. Linkages are then confirmed by the SMEs on the Examination Review Committees.

> **Finding 5**: The methods used to establish a link between examination content and the competencies necessary for entry level practice appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – ITEM DEVELOPMENT AND PRETESTING

As item writers, SMEs are provided a document on the principles of item writing, and guidelines on cognitive levels. They are also provided item writing guidelines by JCNDE. SMEs are asked to review the content specifications to ensure a clear linkage between the items and the examination content outlines.

New items are reviewed by SMEs on the Examination Review Committee during item review meetings. In addition, new items are included on forms as experimental items (pretest items) and are not counted toward a candidate's score. Item analyses are then performed, and the statistical performance of these items is reviewed by JCNDE staff to determine whether the items meet criteria for inclusion on future examination forms. In evaluating item performance, JCNDE staff consider indices of both item difficulty and item discrimination. Items that do not meet defined performance criteria are returned for revision or are eliminated. OPES reviewed item level performance data and the item performance criteria provided by JCNDE.

Finding 6: The procedures used to develop, review, and pretest new items appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – EXAMINATION FORMS

The INBDE is administered over two days and is ten and a half hours long. There are 400 scorable items and 100 pretest items. The examination is administered in six 105-minute sections to allow candidates breaks between sections.

Examination forms are constructed by JCNDE's test development team of industrial and organizational psychologists. Each form is constructed based on the content specifications. In addition, all examination forms are constructed using the same criteria to ensure that forms are comparable in terms of content and item difficulty.

Finding 7: The procedures used to construct the INBDE forms appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – EXAMINATION SCORING

The INBDE consists of 400 multiple-choice items that are scored dichotomously (correct or incorrect). There is no penalty for selecting an incorrect response—a candidate's score is based on the number of correct responses. In calculating a candidate's score, the raw score is obtained by computing the number of items answered correctly. The passing score for the examination is determined using the Bookmark standard setting procedure.

As part of the validation process, examinations are continually evaluated to ensure they are measuring required knowledge. In addition, candidates can make comments during their examination about the examination or questions.

Results for candidates who achieve a score at or above the cut score are reported as "pass." Candidates who fail the examination receive information about their performance in each of the clinical component areas and foundation knowledge areas assessed on the examination. This allows candidates to identify areas of weakness and to study for reexamination. Candidates who fail also receive their overall scaled score. A scaled score of 75 is required to pass the examination.

After administration of the examination, JCNDE performs item analyses and evaluates overall examination statistics, including test mean and test standard deviation. Items identified as problematic are reviewed by SMEs. Items are evaluated with respect to p-values and adjusted point-biserial correlations. Those items meeting the psychometric standards are then incorporated into the 3 parameter Item Response Theory (IRT) model. Candidate comments are also taken into consideration in the review of problematic items as part of the comprehensive review of an examination's performance. OPES reviewed examination level performance data provided by JCNDE.

Finding 8: The examination-level statistics indicate adequate performance for licensure examinations.

Finding 9: The scoring criteria for the INBDE is applied equitably, and the examination scoring process appears consistent with professional guidelines and technical standards.

CONCLUSIONS

The examination development activities conducted by JCNDE appear to meet professional guidelines and technical standards regarding the use of item development and examination construction, the linkage of each item to the examination content outline, pretesting, the development of new examination forms, and scoring. The steps taken to score the examination appear to provide a fair and objective evaluation of candidate performance. The steps taken to evaluate examination performance also appear to be reasonable.

CHAPTER 4 | PASSING SCORES AND PASSING RATES

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE INBDE Technical Report* and the additional information provided by JCNDE.

PASSING SCORE STANDARDS

The passing score of an examination is the score that represents the level of performance that divides those candidates for licensure who are minimally competent from those who are not competent.

The following standards are most relevant to passing scores, cut points, or cut scores for licensure examinations, as referenced in the *2014 Standards*.

Standard 5.21

When proposed score interpretations involve one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly (p. 107).

Standard 11.16

The level of performance required for passing a credentialing test should depend on the knowledge and skills necessary for credential-worthy performance in the occupation or profession and should not be adjusted to control the number or proportion of persons passing the test (p. 182).

The supporting commentary on passing or cut scores in Chapter 5 of the *Standards*, "Scores, Scales, Norms, Score Linking, and Cut Scores" states that the standard setting process used should be clearly documented and defensible. The qualifications and the process of selection of the judges involved should be part of the documentation. A sufficiently large and representative group of judges should be involved, and care must be taken to ensure that judges understand the process and procedures they are to follow (p.101).

In addition, the supporting commentary in Chapter 11 of the *Standards*, "Workplace Testing and Credentialing," states that the focus of tests used in credentialing is on "the standards of competence needed for effective performance (e.g., in licensure this refers to safe and effective performance in practice)" (p. 175). The supporting commentary further states, "Standards must

be high enough to ensure that the public, employers, and government agencies are well served, but not so high as to be unreasonably limiting" (p. 176).

Policy OPES 20-01, as mandated by BPC § 139, specifies that board members, committee members, and instructors should not serve as expert consultants in the licensure examination development process. This is due to potential conflict of interest, undue influence, and security considerations.

STANDARD SETTING METHODOLOGY

JCNDE uses a criterion-referenced Bookmark standard setting method to set the passing scores for the INBDE. This method relies on the expert judgment of SMEs to determine the knowledge a candidate should possess to be minimally competent for safe and effective practice.

JCNDE Standard Setting Committees consist of SMEs who are practitioners, practical examination raters, and educators. Committees are facilitated by JCNDE psychometricians. SMEs who participate in the standard setting process are required to sign JCNDE's security agreement.

The passing score setting process begins with SMEs reviewing non-disclosure and security agreements. The facilitator then explains the purpose of standard setting as well as general information regarding the INBDE. Panelists are then instructed to take a truncated form that is representative of the INBDE in terms of psychometric standards as well as content distribution. After completing the truncated form, the facilitator gives a presentation on the Bookmark procedure and provides a definition of the Just Qualified Candidate (JQC). The SMEs are then broken into groups and are instructed to discuss and list the specific distinguishing knowledge, skills, and abilities of the JQC. These discussions are transcribed and used as references for the SMEs when considering the JQC in later portions of the workshop.

The Bookmark procedure is introduced using a practice ordered item booklet (OIB). The booklet contains 12 items arranged from easiest to hardest. The SMEs are told to indicate on which page of the OIB the JQC would have at least a 66% chance of choosing the correct answer. The results of the practice exercise are discussed, and then the same process is applied to the INBDE items. In subsequent rounds, additional information about item performance is supplied

to the SMEs along with new ordered item booklets. The results of the Bookmark procedure determine the theta value which corresponds to the JFC and is used in the equating process to determine the cut score for forms.

IRT statistics and the Bookmark standard setting results are used along with the examination content specifications to produce parallel forms of the examinations based on the criterion-referenced passing score standard.

Finding 10: The participation of SMEs in setting the passing standard meets professional guidelines and technical standards. However, including the service of educators in the process is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139.

Recommendation 4: To be fully compliant with *Policy OPES 20-01*, OPES recommends phasing out or limiting the service of educators as SMEs during standard setting processes.

Finding 11: The methods used to set the passing standard for the INBDE appear consistent with professional guidelines and technical standards.

PASSING RATES

The passing rates for the INBDE were provided for 2020 and 2021. The passing rates were broken down by first-time attempt, and retake and school accreditation. The first attempt passing rates for candidates from accredited institutions was approximately 99%; the pass rate for candidates from unaccredited institutions was approximately 67%. The overall pass rate for first-time attempts is approximately 86%.

Finding 12: The methods used to determine the cut score and the resulting candidate pass rates appear to be consistent with professional guidelines and technical standards.

Recommendation 5: JCNDE should consider the implications of the high INBDE passing rate for candidates from accredited institutions. It is possible that the examination is an unnecessary barrier for some candidates.

CONCLUSIONS

The passing score methodology used by JCNDE to set the passing standard and determine the scaled scores demonstrate a sufficient degree of validity, thereby appearing to meet professional guidelines and technical standards. The difference in passing rates between accredited and unaccredited schools indicates that the INBDE is capturing an underlying difference in the ability of candidates. The difference in pass rates provides support for the validity of the INBDE to assess the knowledge necessary for minimum competency for the practice of dentistry.

CHAPTER 5 | TEST ADMINISTRATION AND SCORE REPORTING

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE INBDE Technical Report* and the additional information provided by JCNDE.

TEST ADMINISTRATION STANDARDS

The following standards are most relevant to the test administration process for licensure examinations, as referenced in the *2014 Standards*.

Standard 3.4

Test takers should receive comparable treatment during the test administration and scoring process (p. 65).

Standard 4.15

The directions for test administration should be presented with sufficient clarity so that it is possible for others to replicate the administration conditions under which the data on reliability, validity, and (where appropriate) norms were obtained. Allowable variations in administration procedures should be clearly described. The process for reviewing requests for additional testing variations should also be documented (p. 90).

Standard 4.16

The instructions presented to test takers should contain sufficient detail so that test takers can respond to a task in the manner that the test developer intended. When appropriate, sample materials, practice or sample questions, criteria for scoring, and a representative item identified with each item format or major area in the test's classification or domain should be provided to the test takers prior to the administration of the test or should be included in the testing material as part of the standard administration instructions (p. 90).

Standard 6.1

Test administrators should follow carefully the standardized procedures for administration and scoring specified by the test developer and any instructions from the test user (p. 114).

Standard 6.2

When formal procedures have been established for requesting and receiving accommodations, test takers should be informed of these procedures in advance of testing (p. 115).

Standard 6.3

Changes or disruptions to standardized test administration procedures or scoring should be documented and reported to the test user (p. 115).

Standard 6.4

The testing environment should furnish reasonable comfort with minimal distractions to avoid construct-irrelevant variance (p. 116).

Standard 6.5

Test takers should be provided appropriate instructions, practice, and other support necessary to reduce construct-irrelevant variance (p. 116).

Standard 8.1

Information about test content and purposes that is available to any test taker prior to testing should be available to all test takers. Shared information should be available free of charge and in accessible formats (p. 133).

Standard 8.2

Test takers should be provided in advance with as much information about the test, the testing process, the intended test use, test scoring criteria, testing policy, availability of accommodations, and confidentiality protection as is consistent with obtaining valid responses and making appropriate interpretations of test scores (p. 134).

TEST ADMINISTRATION – INFORMATION AND INSTRUCTIONS TO CANDIDATES

All candidates receive a candidate guide that informs them of the structure and purpose of the examination. The guide includes examples of standard questions, as well as questions with a 'Patient Box' and dental charts.

The JCNDE website provides detailed information about the INBDE. The JCNDE website includes the following information for candidates:

- Specific information about taking the test on the computer
- Examination scoring and provision of score reports
- Examination accommodations
- Examination site reporting, check-in, and security procedures
- Security procedures and security breach information

JCNDE also provides an option for candidates to become familiar with the test-taking process. Candidates are shown the scheduling and registration process, the check-in process, the test center staff and surroundings, and a generic 15-minute sample test.

> **Finding 13**: The directions and instructions provided to candidates appear straightforward. The information available to candidates is detailed and comprehensive.

TEST ADMINISTRATION – CANDIDATE REGISTRATION

Approved candidates can register to take the examination on the ADA.org website. After the registration process is complete, candidates are eligible to take the examination for a six-month period. Candidates must provide identification which matches the registration exactly.

The JCNDE website and the Candidate Information Bulletin (CIB) provides detailed instructions and information about the application and registration process, including:

- Examinee license application requirements and qualifications
- Schedule of examination fees
- Examination application, registration, and scheduling
- Rescheduling or canceling a test appointment

Finding 14: The INBDE registration process appears straightforward. The information available to candidates is detailed and comprehensive. The candidate registration process appears to meet professional guidelines and technical standards.

TEST ADMINISTRATION – ACCOMMODATION REQUESTS

JCNDE complies with the Americans with Disabilities Act and provides reasonable accommodations to candidates with documented disabilities or medical conditions. Candidates who require testing accommodations must submit a Request for Special Examination Accommodations form that indicates the accommodation requested to address functional limitations. The second page of the form requires a signed evaluation report completed by a qualified health care professional that includes information about the candidate's disability or diagnosis and recommendations for accommodation.

Finding 15: JCNDE's accommodation procedures appear consistent with professional guidelines and technical standards.

TEST ADMINISTRATION – TEST CENTERS

Prometric administers the INBDE throughout the calendar year via computer at one of 18 designated Prometric testing centers. Prometric's testing centers use trained proctors and controlled testing conditions.

TEST ADMINISTRATION – STANDARDIZED PROCEDURES AND TESTING ENVIRONMENT

Candidates are tested in similar testing centers, using the same type of equipment, under the same conditions. All candidates are assessed on the same examination content.

Finding 16: The procedures established for the INBDE test administration process and the testing environment appear to be consistent with professional guidelines and technical standards.

SCORE REPORTING

Examination results are typically provided 3–4 weeks after the examination date. Candidates' pass/fail status is reported to their licensing entity, and candidates can view their results by logging into their account on JCNDE's website.

CONCLUSIONS

The test administration protocols established by JCNDE and Prometric appear to be consistent with professional guidelines and technical standards.

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CHAPTER 6 | TEST SECURITY

TEST SECURITY STANDARDS

Unless otherwise noted, the source for the information in this chapter is the 2021 *JCNDE INBDE Technical Report* and the additional information provided by JCNDE.

The following standards are most relevant to test security for licensure examinations, as referenced in the *2014 Standards*.

Standard 6.6

Reasonable efforts should be made to ensure the integrity of test scores by eliminating opportunities for test takers to attain scores by fraudulent or deceptive means (p. 116).

Standard 6.7

Test users have the responsibility of protecting the security of test materials at all times (p. 117).

Standard 8.9

Test takers should be made aware that having someone else take the test for them, disclosing confidential test material, or engaging in any other form of cheating is unacceptable and that such behavior may result in sanctions (p. 136).

Standard 9.21

Test users have the responsibility to protect the security of tests, including that of previous editions (p. 147).

TEST SECURITY – EXAMINATION MATERIALS AND CANDIDATE INFORMATION

JCNDE has developed policies and procedures for maintaining the custody of materials and for conveying responsibility for examination security to examination developers, administrators, and users.

JCNDE staff are trained in procedures for handling secure materials and are required to comply with JCNDE policies regarding confidentiality. In addition, SMEs involved in examination development processes must complete a security agreement.

The candidate information booklet addresses the following areas regarding security:

- Candidates must provide current and valid government-issued photo ID to sit for all examinations. The name on the ID must match the name on the admission letter, the photo must be recognizable as the person that the ID was issued to, and the candidate must keep their ID with them at all times.
- Candidates are prohibited from leaving the examination area without permission.
- Candidates are prohibited from communicating with other candidates.
- Candidates are prohibited from requesting information from proctors and examiners about the examination.
- Candidates are prohibited from bringing any cellular phones, electronic devices, materials, or personal belongings into the examination rooms.

Finding 17: The security procedures practiced by JCNDE regarding the handling of examination materials and managing candidates appear to meet professional guidelines and technical standards.

TEST SECURITY – TEST SITES

Prometric staff are trained in procedures for maintaining security of examination materials at test sites.

At test sites, candidates are required to provide current and valid government-issued identification to sit for the examination. In addition, Prometric staff use biometric technology to capture each candidate's identity.

The CIB lists items that candidates are prohibited from bringing into secure testing areas. Prohibited items include, but are not limited to, outside books or reference materials, electronic devices, and accessories. In addition, the CIB describes the examination security procedures, including the consequences of examination subversion or falsification of information.

During candidate check-in, Prometric staff perform visual inspections to check for recording devices and other prohibited items. All testing sessions are monitored by staff at the test center. Proctors are trained to recognize potential test security breaches. In addition, testing sessions are video recorded.

> **Finding 18**: The security procedures practiced by Prometric at test sites are consistent with professional guidelines and technical standards.

CONCLUSIONS

The test security protocols established by JCNDE and Prometric for handling examination materials, candidate information, and in the test sites appear to meet professional guidelines and technical standards.

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CHAPTER 7 | COMPARISON OF THE INBDE CONTENT OUTLINE WITH THE CALIFORNIA DESCRIPTION OF DENTIST PRACTICE

PARTICIPATION OF SUBJECT MATTER EXPERTS

OPES convened a 2-day teleconference linkage study workshop on January 19-20, 2023, to evaluate the INBDE content outline and to compare it with the description of practice from the 2018 *California* OA.

OPES worked collaboratively with the Board to recruit nine SMEs to participate in the workshop. The SMEs represented the profession in terms of license type, years of experience, and geographic location in California. All SMEs worked as dentists in various settings.

LINKAGE STUDY WORKSHOP PROCESS

Before the workshop, the SMEs completed OPES' security agreement, self-certification, and personal data (demographic) forms. At the beginning of the workshop, the OPES test specialist explained the importance of, and the guidelines for, security during and outside the workshop.

Next, the OPES test specialist gave a PowerPoint presentation on the purpose and importance of an OA, validity, content validity, reliability, test administration standards, examination security, and the role of SMEs. The OPES test specialist also explained the purpose of the workshop.

The SMEs were instructed to evaluate and link each task statement and each knowledge statement of the California dentist description of practice to the topic areas included on the INBDE content outline. The SMEs worked as a group to evaluate and link all the tasks and knowledge statements.

The JCNDE INBDE content outline is provided in Table 1. Table 2 provides the content areas of the corresponding California description of practice.

TABLE 1 – JCNDE INBDE CONTENT OUTLINE

Foundation Knowledge Area 1 (FK1) focuses on application of knowledge of molecular, biochemical, cellular, and systems-level development, structure and function, to aid in the prevention, diagnosis, and management of oral disease and to promote and maintain oral health.
1.1 Structure and function of the normal cell and basic types of tissues comprising the human body.
1.2 Structure and function of cell membranes and the mechanism of neurosynpatic transmission.
1.3 Mechanisms of intra and intercellular communications and their role in health and disease.
1.4 Health maintenance through the regulation of major biochemical energy production pathways and the synthesis/degradation of macromolecules. Impact of dysregulation in disease on the management of oral health.
1.5 Atomic and molecular characteristics of biological constituents to predict normal and pathological function.
1.6 Mechanisms that regulate cell division and cell death, to explain normal and abnormal growth and development.
1.7 Biological systems and their interactions to explain how the human body functions in health and disease.
1.8 Principles of feedback control to explain how specific homeostatic systems maintain the internal environment and how perturbations in these systems may impact oral health.

Foundation Knowledge Area 2 (FK2) focuses on application of knowledge of physics and chemistry to explain normal biology and pathobiology, to aid in the prevention, diagnosis, and management of oral disease and to promote and maintain oral health.
2.1 Principles of blood gas exchange in the lung and peripheral tissue to understand how hemoglobin, oxygen, carbon dioxide and iron work together for normal cellular function.
2.2 Impact of atmospheric pressure and changes therein (e.g., high altitudes, in space, or underwater).
2.3 The stability and dissolution of enamel and dentin as a result of factors and conditions within the oral environment, including: abrasion, attrition and erosion; changes in oral pH; exposure to physical or chemical substances, or to physical force (gritty/rough physical materials, stone powder, acidic food or drink, bulimia, bruxism, physical trauma, etc.).
2.4 External forces resulting in hard and soft tissue trauma; tissue milieu factors that play a role in inflammation, erosion, overgrowth, or necrosis.
2.5 Ergonomic issues resulting in loss of productivity, musculoskeletal disorders, illnesses, injuries, or decreased work satisfaction (contingent on the intensity, frequency and duration of exposure).

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 3 (FK3) focuses on application of knowledge of physics and chemistry to explain the characteristics and use of technologies and materials used in the prevention, diagnosis, and management of oral disease and to promote oral health.
3.1 Principles of radiation, radiobiologic concepts, and the uses of radiation in the diagnosis and treatment of oral and systemic conditions.
3.2 Dental material properties, biocompatibility, and performance, and the interaction among these in working with oral structures in health and disease.
3.3 Principles of laser usage; the interaction of laser energy with biological tissues; uses of lasers to diagnose and manage oral conditions.

Foundation Knowledge Area Four (FK4) Principles of Genetic, Congenital, and Developmental Diseases and Conditions and their Clinical Features to Understand Patient Risk
4.1 Genetic transmission of inherited diseases and their clinical features to inform diagnosis and the management of oral health.
4.2 Congenital (non-inherited) diseases and developmental conditions and their clinical features to inform the provision of oral health care.

Foundation Knowledge Area 5 (FK5) focuses on the application of knowledge of the cellular and molecular bases of immune and non-immune host defense mechanisms in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
5.1 Function and dysfunction of the immune system, of the mechanisms for distinction between self and non-self (tolerance and immune surveillance) to the maintenance of health and autoimmunity.
5.2 Differentiation of hematopoietic stem cells into distinct cell types and their subclasses in the immune system and its role for a coordinated host defense against pathogens (e.g., HIV, hepatitis viruses).
5.3 Mechanisms that defend against intracellular or extracellular microbes and the development of immunological prevention or treatment strategies.

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 6 (FK6) focuses on the application of knowledge of general and disease-specific pathology to assess patient risk in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
6.1 Cellular responses to injury; the underlying etiology, biochemical, and molecular alterations; and the natural history of disease; in order to assess therapeutic intervention.
6.2 Vascular and leukocyte responses of inflammation and their cellular and soluble mediators to understand the prevention, causation, treatment and resolution of tissue injury.
6.3 Interplay of platelets, vascular endothelium, leukocytes, and coagulation factors in maintaining fluidity of blood, formation of thrombi, and causation of atherosclerosis as it relates to the management of oral health.
6.4 Impact of systemic conditions on the treatment of dental patients.
6.5 Mechanisms, clinical features, and dental implications of the most commonly encountered metabolic systemic diseases.

Foundation Knowledge Area 7 (FK7) focuses on the application of knowledge of the biology of microorganisms in physiology and pathology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
7.1 Principles of host–pathogen and pathogen–population interactions and knowledge of pathogen structure, transmission, natural history, and pathogenesis to the prevention, diagnosis, and treatment of infectious disease.
7.2 Principles of epidemiology to achieving and maintaining the oral health of communities and individuals.
7.3 Principles of symbiosis (commensalisms, mutualism, and parasitism) to the maintenance of oral health and prevention of disease.

Foundation Knowledge Area 8 (FK8) focuses on the application of knowledge of pharmacology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
8.1 Pathologic processes and basic principles of pharmacokinetics and pharmacodynamics for major classes of drugs and over-the-counter products to guide safe and effective treatment.
8.2 Optimal drug therapy for oral conditions based on an understanding of pertinent research, relevant dental literature, and regulatory processes.

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 9 (FK9) focuses on the application of knowledge of sociology, psychology, ethics, and other behavioral sciences in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
9.1 Principles of sociology, psychology, and ethics in making decisions regarding the management of oral health care for culturally diverse populations of patients.
9.2 Principles of sociology, psychology and ethics in making decisions and communicating effectively in the management of oral health care for the child, adult, geriatric, or special needs patient.
9.3 Principles of sociology, psychology, and ethics in managing fear and anxiety and acute and chronic pain in the delivery of oral health care.
9.4 Principles of sociology, psychology, and ethics in understanding and influencing health behavior in individuals and communities.
9.5 Principles of psychology, ethics and related principles of practice management in making decisions regarding delivery of care and choice of instrumentation, materials, and treatment.

Foundation Knowledge Area 10 (FK10) focuses on the application of research methodology and analysis, and informatics tools in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
10.1 Basic mathematical tools and concepts, including functions, graphs and modeling, measurement and scale, and quantitative knowledge, in order to understand the specialized functions of membranes, cells, tissues, organs, and the human organism, especially those related to the head and neck, in both health and disease.
10.2 Principles and logic of epidemiology and the analysis of statistical data in the evaluation of oral disease risk, etiology, and prognosis.
10.3 Principles of information systems, use, and limitations, and their application to information retrieval and clinical problem solving.
10.4 Biomedical and health informatics, including data quality, analysis, and visualization, and its application to diagnosis, therapeutics, and characterization of populations and subpopulations.
10.5 Elements of the scientific process, such as inference, critical analysis of research design, and appreciation of the difference between association and causation, to interpret the findings, applications, and limitations of observational and experimental research in clinical decision-making using original research articles as well as review articles.

TABLE 2– CONTENT AREAS OF THE 2018 CALIFORNIA DENTIST DESCRIPTION OF PRACTICE

CONTENT AREA	Weights
1. Patient Evaluation	13
2. Endodontics	6
3. Indirect Restoration	7
4. Direct Restoration	7
5. Preventative Care	5
6. Periodontics	4
7. Fixed Partial Dentures	6
8. Removable Partial Dentures	4
9. Complete Dentures	4
10. Implant Restoration	3.5
11. Oral Surgery	5
12. Teeth Whitening	2
13. Occlusal Splint Therapy	3
14. Safety and Sanitation	10.5
15. Ethics	7
16. Law	13
Total	100

LINKAGE RESULTS

The SMEs linked the tasks and knowledge statements of the California description of practice to the INBDE content outline. The SMEs determined that the INBDE did not assess practical demonstration of skills. The INBDE also did not assess California-specific laws and ethical guidelines.

> **Finding 19**: The SMEs concluded that the content of the INBDE adequately assesses the basic knowledge required for competent entry level practice of dentists in California.

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CHAPTER 8 | CONCLUSIONS AND RECOMMENDATIONS

OPES has completed a comprehensive analysis and evaluation of the documents provided by JCNDE.

OPES finds that the procedures used to establish and support the validity and defensibility of the Integrated INBDE (i.e., OA, examination development and scoring, passing scores and passing rates, test administration and score reporting, and test security procedures) appear to meet professional guidelines and technical standards as outlined in the *2014 Standards* and in BPC § 139.

However, OPES finds that including the service of educators in examination development processes is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139. OPES recommends phasing out the service of educators as SMEs.

OPES finds that the experience of practitioners in the OA development should include practitioners with 5 years or less experience.

OPES finds that the occupational analysis process should be evaluated to increase the frequency of occupational analysis.

Given the findings regarding the INBDE, OPES supports the Board's continued use of the INBDE along with the ADEX and LEX examinations for licensure in California.

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CHAPTER 9 | REFERENCES

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REVIEW OF THE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS DENTAL LICENSURE OBJECTIVE STRUCTURED CLINICAL EXAMINATION

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

DENTAL BOARD OF CALIFORNIA

REVIEW OF THE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS DENTAL LICENSURE OBJECTIVE STRUCTURED CLINICAL EXAMINATION

June 2023

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

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OFFICE OF PROFESSIONAL EXAMINATION SERVICES

This report is mandated by California Business and Professions Code (BPC) § 139 and by DCA *Licensure Examination Validation Policy OPES 22-01*.

EXECUTIVE SUMMARY

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs used in California licensure comply with psychometric and legal standards. To become a licensed dentist in California, a candidate must have the requisite education and experience and pass the following three examinations:

1. Integrated National Board Dental Examination (INBDE)
2. American Board of Dental Examiners (ADEX)
3. California Dentist Law and Ethics Examination (LEX)

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Dental Licensure Objective Structured Clinical Examination (DLOSCE), which is developed by the Joint Commission on National Dental Examinations (JCNDE) and administered by Prometric Inc. OPES performed this review to evaluate the suitability of the examination for use in California licensure of dentists. The examination is accepted in 6 states.

The DLOSCE requires candidates to demonstrate the clinic skills necessary to practice safely and within the dentistry scope of practice. JCNDE has researched and validated the examination to ensure that the competencies required for entry level practice are measured.

OPES, in collaboration with the Board, received and reviewed the *DLOSCE Technical Report* (2021 *DLOSCE Technical Report*), a report provided by JCNDE. The report included information on an occupational analysis (OA) conducted in 2016 addressing the practices and procedures used to develop and validate the DLOSCE. In addition, OPES reviewed other reports and documents provided by JCNDE. OPES performed a comprehensive evaluation of the documents to determine whether the following DLOSCE components met professional guidelines and technical standards: (a) OA, (b) examination development and scoring, (c) passing scores and passing rates, (d) test administration and score reporting, and (e) test security procedures. Follow-up emails were also exchanged with JCNDE representatives to clarify processes.

OPES found that the procedures used to establish and support the validity and defensibility of the components listed above appear to meet professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing* (*2014 Standards*) and in California Business and Professions Code (BPC) § 139. However, to fully comply with BPC § 139 and related *DCA Policy OPES 20-01 Participation in Examination Development Workshops* (*Policy OPES 20-01*), OPES recommends phasing out the service of instructors in examination development processes.

Regarding the OA process, OPES recommends that JCDNE take steps to include practitioners with 5 years or less experience. OPES also recommends that JCDNE evaluate the occupational analysis process to increase the frequency of developing new tasks and knowledge statements.

In addition to reviewing documents provided by JCNDE, OPES convened a linkage workshop of licensed California dentists in December 2022. The dentists served as subject matter experts (SMEs) to review the content of the DLOSCE. The SMEs were selected to represent the profession in terms of geographic location and experience. The purpose of the review was to link the content of the DLOSCE content outline with the California description of practice that resulted from the *Occupational Analysis of the Dentist Profession in California* conducted by OPES in 2018 (*2018 California OA*). During this workshop, the SMEs linked the tasks and knowledge statements from the California description of practice to the content outline of the DLOSCE.

The results of the linkage study indicated that the content of the DLOSCE adequately assesses the clinical skills required for competent entry level practice of dentists in California. The DLOSCE did not assess the comprehensive knowledge base required for competent entry level practice of dentists in California. The DLOSCE did not address the California-specific laws and ethical guidelines required for competent entry level practice of dentists in California.

Given the findings, OPES generally supports the Board's potential use of the DLOSCE for licensure in California, as an alternative to the ADEX, and in addition to the INBDE and LEX.

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CHAPTER 1 | INTRODUCTION

PURPOSE OF THE COMPREHENSIVE REVIEW

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) must ensure that examination programs used in California licensure comply with psychometric and legal standards. The public must be reasonably confident that an individual passing a licensure examination has the requisite knowledge and skills to practice safely and competently in California.

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Dental Licensure Objective Structured Clinical Examination (DLOSCE) developed and administered by Joint Commission on National Dental Examinations (JCNDE). The DLOSCE is a national examination consisting of scenario-based, multiple-choice and multiple-response questions. The focus of the DLOSCE is dental clinical judgment and skills required in direct chair-side treatment of patients. The DLOSCE contains 150 items broken down into the following content areas:

1. Restorative Dentistry
2. Prosthodontics
3. Oral Pathology, Pain Management, and Temporomandibular Dysfunction
4. Periodontics
5. Oral Surgery
6. Endodontics
7. Orthodontics
8. Medical Emergencies

The OPES review had three purposes:

1. To evaluate the suitability of the DLOSCE for use in California.
2. To determine whether the DLOSCE meets the professional guidelines and technical standards outlined in *the Standards for Educational and Psychological Testing* (*2014 Standards*) and in California Business and Professions Code (BPC) § 139.
3. To identify any areas of California practice that the DLOSCE does not assess.

OPES recognizes that evaluating the suitability of the DLOSCE involves complex analysis. As noted in the *Standards* (p. 7):

> Evaluating the acceptability of a test does not rest on the literal satisfaction of every standard … and the acceptability of a test or test application cannot be determined by using a checklist. Specific circumstances affect the importance of individual standards, and individual standards should not be considered in isolation. Therefore, evaluating acceptability depends on (a) professional judgment that is based on a knowledge of behavioral science, psychometrics, and the relevant standards in the professional field to which the test applies; (b) the degree to which the intent of the standard has been satisfied by the test developer and user; (c) the alternative measurement devices that are readily available; (d) research and experiential evidence regarding the feasibility of meeting the standard; and (e) applicable laws and regulations.

OPES, in collaboration with the Board, requested documentation from JCNDE to determine whether the following examination program components met professional guidelines and technical standards outlined in the *2014 Standards* and BPC § 139: (a) occupational analysis (OA),[1] (b) examination development and scoring, (c) passing scores[2] and passing rates, (d) test administration and score reporting, and (e) test security procedures.

OPES' evaluation of the DLOSCE is based solely on its review of the documentation provided by JCNDE. OPES did not seek to independently verify the claims and statements made by JCNDE.

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[1] An occupational analysis is also known as a job analysis, practice analysis, or task analysis. For clarity and consistency, this report uses the term "occupational analysis" to refer to the type of analysis that supports the claim that an examination assesses the skills and knowledge required for safe and effective practice at entry level (2014 *Standards*).

[2] A passing score is also known as a pass point or cut score.

CALIFORNIA LAW AND POLICY

BPC § 139 states:

> The Legislature finds and declares that occupational analyses and examination validation studies are fundamental components of licensure programs.

BPC § 139 further requires that DCA develop a policy to address the minimum requirements for psychometrically sound examination validation, examination development, and OAs, including standards for the review of state and national examinations.

DCA *Policy OPES 22-01 Licensure Examination Validation* (*Policy OPES 22-01*) specifies the *2014 Standards* as the most relevant technical and professional standards to be followed to ensure that examinations used for licensure in California are psychometrically sound, job-related, and legally defensible.

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CHAPTER 2 | OCCUPATIONAL ANALYSIS

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE DLOSCE Technical Report* and the additional information provided by JCNDE.

OCCUPATIONAL ANALYSIS STANDARDS

The following standard is most relevant to conducting OAs for licensure examinations, as referenced in the *2014 Standards*:

> **Standard 11.13**
>
> The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale and evidence should be provided to support the claim that the knowledge or skills being assessed are required for credential-worthy performance in that occupation and are consistent with the purpose for which the credentialing program was instituted (pp. 181–182).

The comment to Standard 11.13 emphasizes its relevance:

> **Comment**: Typically, some form of job or practice analysis provides the primary basis for defining the content domain. If the same examination is used in the credentialing of people employed in a variety of settings and specialties, a number of different job settings may need to be analyzed. Although the job analysis techniques may be similar to those used in employment testing, the emphasis for credentialing is limited appropriately to knowledge and skills necessary for effective practice (p. 182).
>
> In tests used for licensure, knowledge and skills that may be important to success but are not directly related to the purpose of licensure (i.e., protecting the public) should not be included (p. 182).

BPC § 139 requires that each California licensure board, bureau, and program report annually on the frequency of its OA and the validation and development of its examinations. *Policy OPES 22-01* states:

> Generally, an occupational analysis and examination outline should be updated every five years to be considered current; however, many factors are taken into consideration when determining the need for a different interval. For instance, an occupational analysis and examination outline/description of practice must be updated whenever there are significant changes in a profession's job tasks and/or demands, scope of practice, equipment, technology, required knowledge, skills and abilities, or law and regulations governing the profession (p. 4).

OCCUPATIONAL ANALYSIS DESCRIPTION, PURPOSE, AND TIME FRAME

In 2016, JCNDE began an OA of the dentistry profession, and the results were documented in the *DLOSCE Technical Report (2021 DLOSCE Technical Report)*. Additional information about this study was obtained through documentation provided by JCNDE, from JCNDE's website, and through email communication with JCNDE representatives.

The purpose of the 2016 OA was to define the practice of dentists in terms of the tasks performed by entry level practitioners and the associated knowledge needed to perform those tasks. JCNDE began by reviewing references and researching the competencies required for dentists. JCNDE uses a broad and comprehensive model whereby content domains are periodically updated. JCNDE is in the process of developing a new set of tasks and knowledge statements.

JCNDE began developing its Domain of Dentistry in 2010. The process was facilitated by psychometricians and involved dentists serving as subject matter experts (SMEs). The SMEs were carefully selected by JCNDE based on their professional and industry experience, background, and geographic location.

In 2011, JCNDE established statements describing the major tasks and activities required for the safe, independent practice of dentistry by entry level practitioners, across all areas of general practice in the dental clinic, with 10 foundation knowledge areas. Two separate panels comprised of 7 and 18 SME, respectively, were convened to evaluate the clinical content areas. The first group was selected for their expertise in specific content areas, while the second group was comprised of all dentists with exactly 5 years of experience. Both of the panels' evaluations supported the use of the 65 clinical content areas and foundation knowledge areas.

In 2015, JCNDE convened a new SME panel to reevaluate the statements developed in 2011. This panel revised the 65 statements, resulting in 56 clinical content areas. A survey was then sent to 2,219 dentists of which 166 responded. The results supported the 56 clinical content areas, and they were subsequently finalized.

> **Finding 1**: The most recent development of tasks and knowledge was completed in 2016. The timeframe for the development of tasks and knowledge is considered to be current and legally defensible. JCNDE is currently working on a new occupational analysis, and they expect to finalize it in 2024.

OCCUPATIONAL ANALYSIS SURVEYS, SAMPLING PLAN AND RESPONSE RATE

JCNDE sent surveys throughout the process to SMEs evaluating the content areas as they moved through the development cycle. These surveys evaluated the frequency and importance of each content area as it relates to the field of dentistry.

In 2011, JCNDE sent a survey to dentists to gather feedback on the 65 content areas developed by the JCNDE. More than 700 dentists responded to the survey. A statistical model was applied to the importance and frequency results and supported the use of all 65 content areas.

In subsequent reviews between 2011 and 2016, the 65 content areas were narrowed down to 56. A new survey for the 56 content areas was sent to 2,219 dentists of which 166 individuals responded. This survey gathered feedback on the relevance and comprehensiveness of the revised list. The survey results supported the change to 56 content areas.

In 2016, JCNDE sent a survey to 34,441 dentists with 10 or less years of experience. The survey evaluated the 56 clinical content areas with respect to importance and frequency. The survey was completed by 4,431 dentists. California practitioners accounted for approximately 9% of the respondents.

Because the DLOSCE focuses on clinical judgment skills, the categories used to report feedback on the examination are grouped into categories that reflect the 56 clinical content areas determined in the 2016 JCNDE OA. The categories are:

1. Restorative Dentistry
2. Prosthodontics
3. Oral Pathology, Pain Management, and Temporomandibular Dysfunction
4. Periodontics
5. Oral Surgery
6. Endodontics
7. Orthodontics
8. Medical Emergencies

Finding 2: The procedures used by JCNDE to develop the surveys and periodically update the content areas are generally consistent with professional guidelines and technical standards.

Recommendation 1: OPES recommends that JCNDE include practitioners licensed 5 years or less in subsequent OA development processes.

Recommendation 2: OPES recommends that JCNDE increase the frequency with which it conducts its OA. *Policy OPES 22-01* specifies that an OA should be conducted every 5 years.

OCCUPATIONAL ANALYSIS – DEVELOPMENT OF EXAMINATION OUTLINE

The process of examination development and the development of tasks and knowledge statements is continuous for the DLOSCE. At each phase of development, SMEs are encouraged to critically evaluate the examination outline for areas that are not addressed or are addressed and should not be. Though this evaluation is ongoing, it does not result in a large number of substantive changes due to the stability of the scope of skill and knowledge required for the safe and effective practice of dentistry.

In 2010, the JCNDE developed 65 statements that describe the major tasks and activities required for the safe, independent practice of dentistry by entry level practitioners, across all areas of general practice in the dental clinic. These clinical content areas were formulated and adapted based on competencies and standards presented in previous reports. The initial statements were subsequently evaluated and revised with the input of SMEs. The resulting 56 content areas were then evaluated by a survey of dentists regarding their importance and frequency.

Finding 3: The processes used to establish a link between tasks and knowledge identified by the OA as required for entry level practice and the examination outline demonstrate a minimum level of validity.

CONCLUSIONS

The OA and the development of the test specifications for the DLOSCE, based on the results of the most recent OA, appear consistent with professional guidelines and technical standards. OPES recommends that the OA committee take steps to include SMEs who represent the practice in terms of all experience levels. Because the results of the OA form the basis of the DLOSCE, entry level practitioners (licensed 5 years or less) should be involved in these processes.

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CHAPTER 3 | EXAMINATION DEVELOPMENT AND SCORING

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE DLOSCE Technical Report* and the additional information provided by JCNDE.

EXAMINATION DEVELOPMENT STANDARDS

Examination development includes many steps, from the development of an examination content outline to scoring and analyzing items after the administration of an examination. Several specific activities involved in the examination development process are evaluated in this section. The activities include developing examination content, linking examination content to the examination outline, and development of the scoring criteria and the examination forms.

The following standards are most relevant to examination development for licensure examinations, as referenced in the *2014 Standards*.

Standard 2.3

For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported (p. 43).

Standard 4.7

The procedures used to develop, review, and try out items and to select items from the item pool should be documented (p. 87).

Standard 4.10

When a test developer evaluates the psychometric properties of items, the model used for that purpose (e.g., classical test theory, item response theory, or another model) should be documented. The sample used for estimating item properties should be described and should be of adequate size and diversity for the procedure. The process by which items are screened and the data used for screening, such as item difficulty, item discrimination, or differential item functioning (DIF) for major examinee groups, should also be documented. When model-based methods (e.g., IRT) are used to estimate item parameters in test

development, the item response model, estimation procedures, and evidence of model fit should be documented (pp. 88–89).

Standard 4.12

Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications (p. 89).

Standard 4.20

The process for selecting, training, qualifying, and monitoring scorers should be specified by the test developer. The training materials, such as the scoring rubrics and examples of test takers' responses that illustrate the levels on the rubric score scale, and the procedures for training scorers should result in a degree of accuracy and agreement among scorers that allows the scores to be interpreted as originally intended by the test developer. Specifications should also describe processes for assessing scorer consistency and potential drift over time in raters' scoring (p. 92).

Standard 4.21

When test users are responsible for scoring and scoring requires scorer judgment, the test user is responsible for providing adequate training and instruction to the scorers and for examining scorer agreement and accuracy. The test developer should document the expected level of scorer agreement and accuracy and should provide as much technical guidance as possible to aid test users in satisfying this standard (p. 92).

The following regulations are relevant to the integrity of the examination development process:

BPC § 139 requires DCA to develop a policy on examination validation which includes minimum requirements for psychometrically sound examination development.

DCA Policy OPES 20-01 Participation in Examination Development Workshops (Policy OPES 20-01), as mandated by BPC § 139, specifies that board members, committee members, and instructors should not serve as expert consultants in the licensure examination development process. This is due to potential conflict of interest, undue influence, and security considerations.

EXAMINATION DEVELOPMENT – PARTICIPATION OF SUBJECT MATTER EXPERTS

Examination development for the DLOSCE is performed by SMEs who serve on the Examination Review Committees for JCNDE's theory examinations. SMEs were carefully selected by JCNDE based on their professional and industry experience and background. Each writing and review panel has 16 SMEs. The group is made of specialists in different domains of dentistry. Each sub-group has between 5 and 6 SMEs. One SME in each group is a general dentist and the remainder are experts in prescribed foundation knowledge areas. JCNDE allows educators to participate in examination development. All SMEs who participate in examination development are required to sign JCNDE's security agreement.

> **Finding 4**: The criteria used to select SMEs appear relatively consistent with professional guidelines and technical standards. However, including the service of educators in examination development processes is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139.
>
> **Recommendation 3**: To be fully compliant with *Policy OPES 20-01*, OPES recommends phasing out or limiting the service of educators during examination development processes.

EXAMINATION DEVELOPMENT – LINKAGE TO EXAMINATION CONTENT OUTLINES

All items are linked to the examination content outlines by a panel of SMEs. Linkages are then confirmed by the SMEs on the Examination Review Committees.

> **Finding 5**: The methods used to establish a link between examination content and the competencies necessary for entry level practice appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – ITEM DEVELOPMENT AND PRETESTING

As item writers, SMEs are provided a document on the principles of item writing, and guidelines on cognitive levels. They are also provided item writing guidelines by JCNDE. SMEs are asked to review the content specifications to ensure a clear linkage between the items and the examination content outlines.

New items are reviewed by SMEs on the Examination Review Committee during item review meetings. In addition, new items are included on forms and their performance in is evaluated to determine if they should be included. Consequently, items that were on the edge of being eliminated in one form may be excluded in the next if the performance of the item does not meet the minimum metrics established by JCNDE. In evaluating item performance, JCNDE staff consider indices of both item difficulty and item discrimination. Items that do not meet defined performance criteria are returned for revision or are eliminated. OPES reviewed item level performance data and the item performance criteria provided by JCNDE.

Finding 6: The procedures used to develop, review, and pretest new items appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – EXAMINATION FORMS

Examination forms are constructed by SMEs on an annual basis. The recruitment for SMEs includes letters to schools, dental boards, and dental societies. Each form is based on the content specifications. The DLOSCE is administered in 5 sections. Four of the sections are 75 minutes long and contain 37 questions each, and one of the sections Is 10 minutes long and contains 2 prescription task questions. Between every section, there is an optional 10-minute break. There are a total of 150 items on the DLOSCE, but not all items are scorable. In addition, all examination forms are constructed using the same criteria to ensure that forms are comparable in terms of content and item difficulty. Whether an item is included in a candidate's score is a function of the item's performance. As such, there is no set number of operational and pretest items. For example, in 2021, Form A had 129 operational items and Form B had 130.

Finding 7: The procedures used to construct the DLOSCE forms appear consistent with professional guidelines and technical standards.

EXAMINATION DEVELOPMENT – EXAMINATION SCORING

The DLOSCE consists of two types of questions. The first is a standard multiple-choice item that is scored dichotomously (correct or incorrect). The second is a multiple-response item with partial credit. For the multiple-response items, a candidate may receive full, partial or no credit. If a candidate selects an option that demonstrates a clinical judgement error, then they receive no credit regardless of other selections. If a candidate selects a neutral option, they are neither penalized nor rewarded. Each correct option is assigned a value between 0 and 1 such that the sum of all correct options is one. A candidate's score is based on the number of correct responses. In calculating a candidate's score, the raw score is obtained by computing the number of points allotted from all questions. The passing score for the examination is determined using the Bookmark standard setting procedure.

As part of the validation process, examinations are continually evaluated to ensure they are measuring required knowledge. In addition, candidates can make comments during their examination about the examination or questions.

Results for candidates who achieve a score at or above the Bookmark established cut score or higher are reported as "pass." Candidates who fail the examination receive information about their performance in each of the eight areas assessed on the examination. This allows candidates to identify areas of weakness and to study for reexamination. Candidates who fail also receive their overall scaled score. A scaled score of 75 is required to pass the examination.

After administration of the examination, JCNDE performs item analyses and evaluates overall examination statistics, including test mean and test standard deviation. Items identified as problematic are reviewed by SMEs. Items are evaluated with respect to p-values and adjusted point-biserial correlations. Candidate comments are also taken into consideration in the review of problematic items as part of the comprehensive review of an examination's performance. OPES reviewed item level performance data and the item performance criteria provided by JCNDE.

Finding 8: The examination-level statistics indicate adequate performance for licensure examinations.

Finding 9: The scoring criteria for the DLOSCE is applied equitably, and the examination scoring process appears consistent with professional guidelines and technical standards.

CONCLUSIONS

The examination development activities conducted by JCNDE appear to meet professional guidelines and technical standards regarding the use of item development and examination construction, the linkage of each item to the examination content outline, pretesting, the development of new examination forms, and scoring. The steps taken to score the examination appear to provide a fair and objective evaluation of candidate performance. The steps taken to evaluate examination performance also appear to be reasonable.

CHAPTER 4 | PASSING SCORES AND PASSING RATES

Unless otherwise noted, the source for the information in this chapter is *the 2021 JCNDE DLOSCE Technical Report* and the additional information provided by JCNDE.

PASSING SCORE STANDARDS

The passing score of an examination is the score that represents the level of performance that divides those candidates for licensure who are minimally competent from those who are not competent.

The following standards are most relevant to passing scores, cut points, or cut scores for licensure examinations, as referenced in the *2014 Standards*.

> **Standard 5.21**
>
> When proposed score interpretations involve one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly (p. 107).
>
> **Standard 11.16**
>
> The level of performance required for passing a credentialing test should depend on the knowledge and skills necessary for credential-worthy performance in the occupation or profession and should not be adjusted to control the number or proportion of persons passing the test (p. 182).

The supporting commentary on passing or cut scores in Chapter 5 of the *Standards*, "Scores, Scales, Norms, Score Linking, and Cut Scores" states that the standard setting process used should be clearly documented and defensible. The qualifications and the process of selection of the judges involved should be part of the documentation. A sufficiently large and representative group of judges should be involved, and care must be taken to ensure that judges understand the process and procedures they are to follow (p.101).

In addition, the supporting commentary in Chapter 11 of the *Standards*, "Workplace Testing and Credentialing," states that the focus of tests used in credentialing is on "the standards of competence needed for effective performance (e.g., in licensure this refers to safe and effective performance in practice)" (p. 175). The supporting commentary further states, "Standards must

be high enough to ensure that the public, employers, and government agencies are well served, but not so high as to be unreasonably limiting" (p. 176).

Policy OPES 20-01, as mandated by BPC § 139, specifies that board members, committee members, and instructors should not serve as expert consultants in the licensure examination development process. This is due to potential conflict of interest, undue influence, and security considerations.

STANDARD SETTING METHODOLOGY

JCNDE uses the criterion-referenced Bookmark standard setting method to set the passing scores for the DLOSCE. This method relies on the expert judgment of SMEs to determine the knowledge a candidate should possess to be minimally competent for safe and effective practice.

JCNDE Standard Setting Committees consist of SMEs who are practitioners, practical examination raters, and educators. Committees are facilitated by JCNDE psychometricians. SMEs who participate in the standard setting process are required to sign JCNDE's security agreement.

The passing score setting process begins with SMEs reviewing non-disclosure and security agreements. The facilitator explains the purpose of standard setting as well as general information regarding the DLOSCE. Panelists are then instructed to take a truncated form that is representative of the DLOSCE in terms of psychometric standards as well as content distribution. After completing the truncated form, the facilitator gives a presentation on the Bookmark procedure and provides a definition of the Just Qualified Candidate (JQC). The SMEs are then broken into groups and are instructed to discuss and list the specific distinguishing knowledge, skills, and abilities of the JQC. These discussions are transcribed and used as references for the SMEs when considering the JQC in later portions of the workshop.

The Bookmark procedure is introduced using a practice ordered item booklet (OIB). The booklet contained a large set of DLOSCE items arranged from easiest to hardest. The SMEs were instructed to indicate on which page of the OIB the JQC would have at least a 50% chance of choosing the correct answer. The results of the practice exercise were discussed and then the same process applied to the DLOSCE items. In subsequent rounds, additional information

about item performance is supplied to the SMEs along with new OIBs. The results of the Bookmark procedure determine the theta value which corresponds to the JFC and is used in the equating process to determine the cut score for forms.

Finding 10: The participation of SMEs in setting the passing standard meets professional guidelines and technical standards. However, including the service of educators in the process is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139.

Recommendation 4: To be fully compliant with *Policy OPES 20-01*, OPES recommends phasing out or limiting the service of educators as SMEs during standard setting processes.

Finding 11: The methods used to set the passing standard for the DLOSCE appear consistent with professional guidelines and technical standards.

PASSING RATES

JCNDE provided the passing rates for the DLOSCE for 2020 and 2021. The passing rates were broken down by first-time attempt, retake, and institution accreditation. The first attempt passing rates for candidates from accredited institutions was approximately 90% (n = 328); the pass rate for candidates from unaccredited institutions was approximately 60% (n = 23). The overall pass rate is approximately 88%.

Finding 12: The methods used to determine the cut score and the resulting candidate pass rates appear to be consistent with applicable standards. The pass rates provided are based on a sample of 328 candidates.

CONCLUSIONS

The passing score methodologies used by JCNDE to set the passing standard and determine the scaled scores demonstrate a sufficient degree of validity, thereby appearing to meet professional guidelines and technical standards. The difference in passing rates between accredited and unaccredited schools indicates that the DLOSCE is capturing an underlying difference in the ability of candidates. The difference in pass rates provides support for the validity of the DLOSCE to assess the clinical skills necessary for minimum competency for the practice of dentistry.

Due to the small number of candidates that have taken the DLOSCE, OPES recommends that the Board continue to monitor the passing rates.

CHAPTER 5 | TEST ADMINISTRATION AND SCORE REPORTING

Unless otherwise noted, the source for the information in this chapter is the *2021 JCNDE DLOSCE Technical Report* and the additional information provided by JCNDE.

TEST ADMINISTRATION STANDARDS

The following standards are most relevant to the test administration process for licensure examinations, as referenced in the *2014 Standards*.

Standard 3.4

Test takers should receive comparable treatment during the test administration and scoring process (p. 65).

Standard 4.15

The directions for test administration should be presented with sufficient clarity so that it is possible for others to replicate the administration conditions under which the data on reliability, validity, and (where appropriate) norms were obtained. Allowable variations in administration procedures should be clearly described. The process for reviewing requests for additional testing variations should also be documented (p. 90).

Standard 4.16

The instructions presented to test takers should contain sufficient detail so that test takers can respond to a task in the manner that the test developer intended. When appropriate, sample materials, practice or sample questions, criteria for scoring, and a representative item identified with each item format or major area in the test's classification or domain should be provided to the test takers prior to the administration of the test or should be included in the testing material as part of the standard administration instructions (p. 90).

Standard 6.1

Test administrators should follow carefully the standardized procedures for administration and scoring specified by the test developer and any instructions from the test user (p. 114).

Standard 6.2

When formal procedures have been established for requesting and receiving accommodations, test takers should be informed of these procedures in advance of testing (p. 115).

Standard 6.3

Changes or disruptions to standardized test administration procedures or scoring should be documented and reported to the test user (p. 115).

Standard 6.4

The testing environment should furnish reasonable comfort with minimal distractions to avoid construct-irrelevant variance (p. 116).

Standard 6.5

Test takers should be provided appropriate instructions, practice, and other support necessary to reduce construct-irrelevant variance (p. 116).

Standard 8.1

Information about test content and purposes that is available to any test taker prior to testing should be available to all test takers. Shared information should be available free of charge and in accessible formats (p. 133).

Standard 8.2

Test takers should be provided in advance with as much information about the test, the testing process, the intended test use, test scoring criteria, testing policy, availability of accommodations, and confidentiality protection as is consistent with obtaining valid responses and making appropriate interpretations of test scores (p. 134).

TEST ADMINISTRATION – INFORMATION AND INSTRUCTIONS TO CANDIDATES

A Candidate Information Bulletin (CIB) is provided to all candidates which informs the candidate of the structure and purpose of the examination. The CIB gives examples of standard questions, as well as questions with a 'Patient Box' and dental charts.

The JCNDE website provides detailed information about the DLOSCE. The CIB provides practice questions which are intended to familiarize the candidate with the format of the test. The JCNDE website includes the following information for candidates:

- Specific information about taking the test on the computer.
- Examination scoring and provision of score reports.
- Examination accommodations.
- Examination site reporting, check-in, and security procedures.
- Security procedures and security breach information.

Finding 13: The directions and instructions provided to candidates appear straightforward. The information available to candidates is detailed and comprehensive.

TEST ADMINISTRATION – CANDIDATE REGISTRATION

Approved candidates can register to take the examination on ADA.org website. After the registration process is complete. After registration and candidate is eligible to take the examination for a six-month period. Candidates must provide identification which matches the registration exactly. If there are errors on the registration changes may be made through the dentpin@ada.org site.

The JCNDE website and the CIB provide detailed instructions and information about the application and registration process, including:

- Examinee license application requirements and qualifications
- Schedule of examination fees
- Examination application, registration, and scheduling
- Rescheduling or canceling a test appointment

Finding 14: The DLOSCE registration process appears straightforward. The information available to candidates is detailed and comprehensive. The candidate registration process appears to meet professional guidelines and technical standards.

TEST ADMINISTRATION – ACCOMMODATION REQUESTS

JCNDE complies with the Americans with Disabilities Act and provides reasonable accommodations to candidates with documented disabilities or medical conditions. Candidates who require testing accommodations must submit a Request for Special Examination Accommodations form that indicates the accommodation requested to address functional limitations. The second page of the form requires a signed evaluation report completed by a qualified health care professional that includes information about the candidate's disability or diagnosis and recommendations for accommodation.

> **Finding 15**: JCNDE's accommodation procedures appear consistent with professional guidelines and technical standards.

TEST ADMINISTRATION – TEST CENTERS

Prometric administers the DLOSCE. The examination is administered in 4 testing windows. Each testing window is approximately 1 month, except for the retake window which is 5 months. Candidates may take the examination during the retake window if they failed in an attempt during the third examination window. The examinations are administered via computer at one of 18 designated Prometric testing centers in California.

> **Finding 16**: Candidates have access to authorized testing centers that administer the DLOSCE. These centers have trained proctors and controlled testing conditions.

TEST ADMINISTRATION – STANDARDIZED PROCEDURES AND TESTING ENVIRONMENT

Candidates are tested in similar testing centers, using the same type of equipment, under the same conditions. All candidates are assessed on the same examination content.

> **Finding 17**: The procedures established for the DLOSCE test administration process and testing environment appear to be consistent with professional guidelines and technical standards.

SCORE REPORTING

Examination results are typically provided approximately 1 month after the examination date. Candidates' pass/fail status is reported to their licensing entity, and candidates can view their results by logging into their account on JCNDE's website.

CONCLUSIONS

The test administration protocols put in place by Prometric appear to be consistent with professional guidelines and technical standards.

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CHAPTER 6 | TEST SECURITY

Unless otherwise noted, the source for the information in this chapter is the *2021JCNDE DLOSCE Technical Report* and the additional information provided by JCNDE.

TEST SECURITY STANDARDS

The following standards are most relevant to test security for licensure examinations, as referenced in the *2014 Standards*.

Standard 6.6

Reasonable efforts should be made to ensure the integrity of test scores by eliminating opportunities for test takers to attain scores by fraudulent or deceptive means (p. 116).

Standard 6.7

Test users have the responsibility of protecting the security of test materials at all times (p. 117).

Standard 8.9

Test takers should be made aware that having someone else take the test for them, disclosing confidential test material, or engaging in any other form of cheating is unacceptable and that such behavior may result in sanctions (p. 136).

Standard 9.21

Test users have the responsibility to protect the security of tests, including that of previous editions (p. 147).

TEST SECURITY – EXAMINATION MATERIALS AND CANDIDATE INFORMATION

JCNDE has developed policies and procedures for maintaining the custody of materials and for conveying responsibility for examination security to examination developers, administrators, and users.

JCNDE staff are trained in procedures for handling secure materials and are required to comply with JCNDE policies regarding confidentiality. In addition, SMEs involved in examination development processes must complete a security agreement.

The candidate information booklet addresses the following areas regarding security:

- Candidates must provide current and valid government-issued photo ID to sit for all examinations. The name on the ID must match the name on the admission letter, the photo must be recognizable as the person that the ID was issued to, and the candidate must keep their ID with them at all times.
- Candidates are prohibited from leaving the examination area without permission.
- Candidates are prohibited from communicating with other candidates.
- Candidates are prohibited from requesting information from proctors and examiners about the examination.
- Candidates are prohibited from bringing any cellular phones, electronic devices, materials, or personal belongings into the examination rooms.

Finding 18: The security procedures practiced by JCNDE regarding the handling of examination materials and managing candidates appear to meet professional guidelines and technical standards

TEST SECURITY – TEST SITES

Prometric staff are trained in procedures for maintaining security of examination materials at test sites.

At test sites, candidates are required to provide current and valid government-issued identification to sit for the examination. In addition, Prometric staff use biometric technology to capture each candidate's identity.

The CIB lists items that candidates are prohibited from bringing into secure testing areas. Prohibited items include, but are not limited to, outside books or reference materials, electronic devices, and accessories. In addition, the CIB describes the examination security procedures, including the consequences of examination subversion or falsification of information.

During candidate check-in, Prometric staff perform visual inspections to check for recording devices and other prohibited items. All testing sessions are monitored by staff at the test center. Proctors are trained to recognize potential test security breaches. In addition, testing sessions are video recorded.

> **Finding 19**: The security procedures practiced by Prometric at test sites are consistent with professional guidelines and technical standards.

CONCLUSIONS

The test security protocols established by JCNDE and Prometric for handling examination materials, candidate information, and in the test sites appear to meet professional guidelines and technical standards.

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CHAPTER 7 | COMPARISON OF THE DLOSCE CONTENT OUTLINE WITH THE CALIFORNIA DESCRIPTION OF DENTIST PRACTICE

PARTICIPATION OF SUBJECT MATTER EXPERTS

OPES convened a 2-day teleconference linkage study workshop on December 1-2, 2022, to evaluate the DLOSCE content outline and to compare it with the description of practice from the *2018 California* OA.

OPES worked collaboratively with the Board to recruit nine SMEs to participate in the workshop. The SMEs represented the profession in terms of license type, years of experience, and geographic location in California. All SMEs worked as dentists in various settings.

LINKAGE STUDY WORKSHOP PROCESS

Before the workshop, the SMEs completed OPES' security agreement, self-certification, and personal data (demographic) forms. At the beginning of the workshop, the OPES test specialist explained the importance of, and the guidelines for, security during and outside the workshop.

Next, the OPES test specialist gave a PowerPoint presentation on the purpose and importance of an OA, validity, content validity, reliability, test administration standards, examination security, and the role of SMEs. The OPES test specialist also explained the purpose of the workshop.

The SMEs were instructed to evaluate and link each task statement of the California dentist description of practice to the topic areas included on the DLOSCE content outline. The SMEs worked as a group to evaluate and link all the tasks and knowledge statements.

The JCNDE DLOSCE content outline is provided in Table 1. Table 2 provides the content areas of the corresponding California description of practice.

TABLE 1 – JCNDE DLOSCE CLINICAL EXAMINATION CONTENT OUTLINE

Foundation Knowledge Area 1 (FK1) focuses on application of knowledge of molecular, biochemical, cellular, and systems-level development, structure and function, to aid in the prevention, diagnosis, and management of oral disease and to promote and maintain oral health.
1.1 Structure and function of the normal cell and basic types of tissues comprising the human body.
1.2 Structure and function of cell membranes and the mechanism of neurosynpatic transmission.
1.3 Mechanisms of intra and intercellular communications and their role in health and disease.
1.4 Health maintenance through the regulation of major biochemical energy production pathways and the synthesis/degradation of macromolecules. Impact of dysregulation in disease on the management of oral health.
1.5 Atomic and molecular characteristics of biological constituents to predict normal and pathological function.
1.6 Mechanisms that regulate cell division and cell death, to explain normal and abnormal growth and development.
1.7 Biological systems and their interactions to explain how the human body functions in health and disease.
1.8 Principles of feedback control to explain how specific homeostatic systems maintain the internal environment and how perturbations in these systems may impact oral health.

Foundation Knowledge Area 2 (FK2) focuses on application of knowledge of physics and chemistry to explain normal biology and pathobiology, to aid in the prevention, diagnosis, and management of oral disease and to promote and maintain oral health.
2.1 Principles of blood gas exchange in the lung and peripheral tissue to understand how hemoglobin, oxygen, carbon dioxide and iron work together for normal cellular function.
2.2 Impact of atmospheric pressure and changes therein (e.g., high altitudes, in space, or underwater).
2.3 The stability and dissolution of enamel and dentin as a result of factors and conditions within the oral environment, including: abrasion, attrition and erosion; changes in oral pH; exposure to physical or chemical substances, or to physical force (gritty/rough physical materials, stone powder, acidic food or drink, bulimia, bruxism, physical trauma, etc.).
2.4 External forces resulting in hard and soft tissue trauma; tissue milieu factors that play a role in inflammation, erosion, overgrowth, or necrosis.
2.5 Ergonomic issues resulting in loss of productivity, musculoskeletal disorders, illnesses, injuries, or decreased work satisfaction (contingent on the intensity, frequency and duration of exposure).

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 3 (FK3) focuses on application of knowledge of physics and chemistry to explain the characteristics and use of technologies and materials used in the prevention, diagnosis, and management of oral disease and to promote oral health.
3.1 Principles of radiation, radiobiologic concepts, and the uses of radiation in the diagnosis and treatment of oral and systemic conditions.
3.2 Dental material properties, biocompatibility, and performance, and the interaction among these in working with oral structures in health and disease.
3.3 Principles of laser usage; the interaction of laser energy with biological tissues; uses of lasers to diagnose and manage oral conditions.

Foundation Knowledge Area Four (FK4) Principles of Genetic, Congenital, and Developmental Diseases and Conditions and their Clinical Features to Understand Patient Risk
4.1 Genetic transmission of inherited diseases and their clinical features to inform diagnosis and the management of oral health.
4.2 Congenital (non-inherited) diseases and developmental conditions and their clinical features to inform the provision of oral health care.

Foundation Knowledge Area 5 (FK5) focuses on the application of knowledge of the cellular and molecular bases of immune and non-immune host defense mechanisms in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
5.1 Function and dysfunction of the immune system, of the mechanisms for distinction between self and non-self (tolerance and immune surveillance) to the maintenance of health and autoimmunity.
5.2 Differentiation of hematopoietic stem cells into distinct cell types and their subclasses in the immune system and its role for a coordinated host defense against pathogens (e.g., HIV, hepatitis viruses).
5.3 Mechanisms that defend against intracellular or extracellular microbes and the development of immunological prevention or treatment strategies.

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 6 (FK6) focuses on the application of knowledge of general and disease-specific pathology to assess patient risk in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
6.1 Cellular responses to injury; the underlying etiology, biochemical, and molecular alterations; and the natural history of disease; in order to assess therapeutic intervention.
6.2 Vascular and leukocyte responses of inflammation and their cellular and soluble mediators to understand the prevention, causation, treatment and resolution of tissue injury.
6.3 Interplay of platelets, vascular endothelium, leukocytes, and coagulation factors in maintaining fluidity of blood, formation of thrombi, and causation of atherosclerosis as it relates to the management of oral health.
6.4 Impact of systemic conditions on the treatment of dental patients.
6.5 Mechanisms, clinical features, and dental implications of the most commonly encountered metabolic systemic diseases.

Foundation Knowledge Area 7 (FK7) focuses on the application of knowledge of the biology of microorganisms in physiology and pathology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
7.1 Principles of host–pathogen and pathogen–population interactions and knowledge of pathogen structure, transmission, natural history, and pathogenesis to the prevention, diagnosis, and treatment of infectious disease.
7.2 Principles of epidemiology to achieving and maintaining the oral health of communities and individuals.
7.3 Principles of symbiosis (commensalisms, mutualism, and parasitism) to the maintenance of oral health and prevention of disease.

Foundation Knowledge Area 8 (FK8) focuses on the application of knowledge of pharmacology in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
8.1 Pathologic processes and basic principles of pharmacokinetics and pharmacodynamics for major classes of drugs and over-the-counter products to guide safe and effective treatment.
8.2 Optimal drug therapy for oral conditions based on an understanding of pertinent research, relevant dental literature, and regulatory processes.

TABLE 1 – JCNDE Foundation Knowledge (Continued)

Foundation Knowledge Area 9 (FK9) focuses on the application of knowledge of sociology, psychology, ethics, and other behavioral sciences in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
9.1 Principles of sociology, psychology, and ethics in making decisions regarding the management of oral health care for culturally diverse populations of patients.
9.2 Principles of sociology, psychology and ethics in making decisions and communicating effectively in the management of oral health care for the child, adult, geriatric, or special needs patient.
9.3 Principles of sociology, psychology, and ethics in managing fear and anxiety and acute and chronic pain in the delivery of oral health care.
9.4 Principles of sociology, psychology, and ethics in understanding and influencing health behavior in individuals and communities.
9.5 Principles of psychology, ethics and related principles of practice management in making decisions regarding delivery of care and choice of instrumentation, materials, and treatment.

Foundation Knowledge Area 10 (FK10) focuses on the application of research methodology and analysis, and informatics tools in the prevention, diagnosis, and management of oral disease and the promotion and maintenance of oral health.
10.1 Basic mathematical tools and concepts, including functions, graphs and modeling, measurement and scale, and quantitative knowledge, in order to understand the specialized functions of membranes, cells, tissues, organs, and the human organism, especially those related to the head and neck, in both health and disease.
10.2 Principles and logic of epidemiology and the analysis of statistical data in the evaluation of oral disease risk, etiology, and prognosis.
10.3 Principles of information systems, use, and limitations, and their application to information retrieval and clinical problem solving.
10.4 Biomedical and health informatics, including data quality, analysis, and visualization, and its application to diagnosis, therapeutics, and characterization of populations and subpopulations.
10.5 Elements of the scientific process, such as inference, critical analysis of research design, and appreciation of the difference between association and causation, to interpret the findings, applications, and limitations of observational and experimental research in clinical decision-making using original research articles as well as review articles.

TABLE 2 – CONTENT AREAS OF THE 2018 CALIFORNIA DENTIST DESCRIPTION OF PRACTICE

CONTENT AREA	Weights
1. Patient Evaluation	13
2. Endodontics	6
3. Indirect Restoration	7
4. Direct Restoration	7
5. Preventative Care	5
6. Periodontics	4
7. Fixed Partial Dentures	6
8. Removable Partial Dentures	4
9. Complete Dentures	4
10. Implant Restoration	3.5
11. Oral Surgery	5
12. Teeth Whitening	2
13. Occlusal Splint Therapy	3
14. Safety and Sanitation	10.5
15. Ethics	7
16. Law	13
Total	100

LINKAGE RESULTS

The SMEs linked the tasks and knowledge statements of the California description of practice to the DLOSCE content outline. Those sections relying on academic knowledge and underlying theory were not addressed, and California related laws and ethical guidelines were not addressed. The combination of the INBDE and DLOSCE address the California description of practice except for those sections related to California laws and ethical guidelines.

> **Finding 20**: The SMEs concluded that the content of the DLOSCE adequately assesses a significant portion of the clinical skills required for competent entry level practice of dentists in California.

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CHAPTER 8 | CONCLUSIONS AND RECOMMENDATIONS

OPES has completed a comprehensive analysis and evaluation of the documents provided by JCNDE.

OPES finds that the procedures used to establish and support the validity and defensibility of the DLOSCE (i.e., OA, examination development and scoring, passing scores and passing rates, test administration and score reporting, and test security procedures) appear to meet professional guidelines and technical standards as outlined in the *2014 Standards* and in BPC § 139.

However, OPES finds that including the service of educators in examination development processes is not fully compliant with *Policy OPES 20-01*, as mandated by BPC § 139. OPES recommends phasing out the service of educators as SMEs.

Regarding the OA process, OPES recommends that JCDNE take steps to include practitioners with 5 years or less experience. In addition, OPES recommends that JCDNE evaluate the occupational analysis process to increase the frequency of developing new tasks and knowledge statements.

Given the findings regarding the DLOSCE, OPES generally supports the Board's potential use of the DLOSCE for licensure in California, as an alternative to the ADEX, and in addition to the INBDE and the LEX. Due to the small number of candidates who have taken the DLOSCE, OPES recommends that the Board continue to monitor the DLOSCE passing rates.

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CHAPTER 9 | REFERENCES

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REVIEW OF THE WESTERN REGIONAL EXAMINING BOARD (WREB) DENTAL EXAM

STATE OF CALIFORNIA

DEPARTMENT OF CONSUMER AFFAIRS

DENTAL BOARD OF CALIFORNIA

REVIEW OF THE WESTERN REGIONAL EXAMINING BOARD (WREB) DENTAL EXAM

October 2020

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STATE OF CALIFORNIA
DEPARTMENT OF CONSUMER AFFAIRS
OFFICE OF PROFESSIONAL EXAMINATION SERVICES

This national review report is mandated by California Business and Professions Code (B&P) § 139 and by DCA Licensure Examination Validation Policy OPES 18-02.

EXECUTIVE SUMMARY

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs used in the California licensure process comply with psychometric and legal standards. The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Western Regional Examining Board (WREB) Dental Exam. The purpose of the OPES review was to evaluate the suitability of the WREB Dental Exam for continued use in California licensure.

The WREB Dental Exam consists of three required sections and two elective sections. The three required sections are: Comprehensive Treatment Planning (CTP), a written, computer-based authentic simulated clinical simulation (ASCE); Operative, a clinical section; and Endodontics, also a clinical section. The two elective sections are both clinical: Periodontics and Prosthodontics. These elective sections are used by states that have these examination sections as a statutory requirement for licensure. The California Dental Board under the California Business and Professions Code (B&P) § 1630 requires that "the examination of applicants for a license to practice dentistry . . . shall include assessing competency in the areas of diagnosis, treatment planning, and restorative, endodontic, periodontic, and prosthetic dentistry." Additionally, the California Dental Board under B&P Code § 1632 (c)(2) requires that candidates pass a written and clinical examination administered by WREB.

OPES, in collaboration with the Board and WREB, received and reviewed the *WREB Practice Analysis General Dentist* report – *September 2019* (*2019 WREB PA*) and the *WREB 2018 Dental Examination Technical Report – October 2019* (*2019 WREB Report*), as well as other documents provided by WREB. Follow-up emails and phone communications were exchanged to clarify the procedures and practices used to develop and validate the WREB Dental Exam. OPES performed a comprehensive evaluation of the documents to determine whether the following test program components met professional guidelines and technical standards: (a) occupational analysis, (b) examination development, (c) passing scores and passing rates, (d) test administration, (e) examination scoring and performance, and (f) test security procedures.

OPES found that the procedures used to establish and support the validity and defensibility of the above test program components of the WREB Dental Exam meet professional guidelines and technical standards outlined in the *Standards for Educational and Psychological Testing* (2014) (*Standards*) and in B&P § 139. Additionally, OPES found that the use of the WREB Dental Exam for licensure in dentistry meets the requirements of the Dental Board of California under B&P Code §§ 1630 and 1632.

In addition to reviewing documents provided by WREB, OPES convened a panel of licensed dentists to serve as subject matter experts (SMEs) to review the content of the WREB Dental Exam. The SMEs were selected by the Board based on their geographic location, experience, and practice specialty. The purpose of the review was to compare the content of the WREB

Dental Exam with the California dentist examination outline resulting from the 2018 California Dentist Occupational Analysis (2018 California Dentist OA) performed by OPES.

Specifically, the SMEs performed a comparison by linking the task and knowledge statements of the 2018 California Dentist examination outline to the content of the WREB Dental Exam sections: CTP, Operative, Endodontics, Periodontics, and Prosthodontics. The linkages were performed to identify whether there were areas of California dentistry practice not measured by the WREB Dental Exam.

The results of the linkage study indicate that all but two topic areas were linked to the WREB Dental Exam: California law and ethics. Overall, the SMEs concluded that the content of the required sections of the WREB Dental Exam adequately assesses what a California dentist is expected to have mastered at the time of licensure, with the exception of law and ethics. These areas should continue to be tested on the California Dentistry Law and Ethics Examination.

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CHAPTER 1 | INTRODUCTION

PURPOSE OF THE COMPREHENSIVE REVIEW

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) must ensure that examination programs used in the California licensure process comply with psychometric and legal standards. The public must be confident that an individual passing a licensing examination has the requisite knowledge and skills to competently and safely practice in the profession.

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) complete a comprehensive review of the Western Regional Examining Board (WREB) Dental Exam, which is administered by WREB and Prometric.

The WREB Dental Exam consists of: one required written, computer-based section, Comprehensive Treatment Planning (CTP), which is an authentic simulated clinical examination (ASCE)[1]; two required clinical sections, Operative and Endodontics; and two optional clinical sections, Periodontics and Prosthodontics. The two optional sections are used in states that have these examination sections as a statutory requirement for licensure. The California Dental Board under the California Business and Professions Code § 1630 requires that "the examination of applicants for a license to practice dentistry . . . shall include assessing competency in the areas of diagnosis, treatment planning, and restorative, endodontic, periodontic, and prosthetic dentistry." Additionally, the California Dental Board under the B&P Code § 1632 (c)(2) requires that candidates pass a written and clinical examination administered by WREB.

The OPES review had four purposes:

1. To evaluate the suitability of the WREB Dental Exam for continued use in California.
2. To determine whether the WREB Dental Exam meets the professional guidelines and technical standards outlined in the *Standards* and in B&P Code § 139.
3. To determine whether the WREB Dental Exam meets the Dental Board of California's examination requirements under B&P Code §§ 1630 and 1632.
4. To identify any areas of California dentistry practice that the WREB Dental Exam does not assess.

OPES, in collaboration with the Board and WREB, requested documentation from WREB to determine whether the following WREB test program components met professional guidelines and technical standards outlined in the *Standards* and in B&P Code § 139: (a) occupational

[1] An authentic simulated clinical examination (ASCE) is a performance-based, open-ended constructed response examination graded by examiners. An ASCE may be used to assess clinical competency under the requirements of B&P Code §§ 1630 and 1632.

analysis (OA),[2] (b) examination development, (c) passing scores,[3] (d) test administration, (e) examination scoring and performance, and (f) test security procedures.

WREB conducted the most recent occupational analysis task analysis in 2019. OPES used two reports for this review: the *WREB Practice Analysis General Dentist*, report – *September 2019* (*2019 WREB PA*), and the *WREB 2018 Dental Examination Technical Report – October 2019* (*2019 WREB Report*).

CALIFORNIA LAW AND POLICY

California B&P Code § 139 states:

> The Legislature finds and declares that occupational analyses and examination validation studies are fundamental components of licensure programs.

It further requires that DCA develop a policy to address the minimum requirements for psychometrically sound examination validation, examination development, and occupational analyses, including standards for the review of state and national examinations.

DCA Licensure Examination Validation Policy OPES 18-02 specifies the *Standards* as the most relevant technical and professional standards to be followed to ensure that examinations used for licensure in California are psychometrically sound, job-related, and legally defensible.

FORMAT OF THE REPORT

The chapters of this report provide the relevant standards related to the WREB Dental Exam and describe the findings and recommendations that OPES identified during its review.

[2] An occupational analysis is also known as a job analysis, practice analysis, or task analysis.
[3] A passing score is also known as a pass point or cut score.

CHAPTER 2 | OCCUPATIONAL ANALYSIS

STANDARDS

The following standard is most relevant to conducting OAs for licensure examinations, as referenced in the *Standards.*

> **Standard 11.13**
>
> The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale and evidence should be provided to support the claim that the knowledge or skills being assessed are required for credential-worthy performance in that occupation and are consistent with the purpose for which the credentialing program was instituted (pp. 181-182).

The comment following Standard 11.13 emphasizes its relevance:

> Typically, some form of job or practice analysis provides the primary basis for defining the content domain. If the same examination is used in the credentialing of people employed in a variety of settings and specialties, a number of different job settings may need to be analyzed. Although the job analysis techniques may be similar to those used in employment testing, the emphasis for credentialing is limited appropriately to knowledge and skills necessary for effective practice… In tests used for licensure, knowledge and skills that may be important to success but are not directly related to the purpose of licensure (e.g., protecting the public) should not be included (p. 182).

California B&P Code § 139 requires that each California licensing board, bureau, commission, and program report annually on the frequency of its occupational analysis and the validation and development of its examinations. DCA Policy OPES 18-02 states:

> Generally, an occupational analysis and examination outline should be updated every five years to be considered current; however, many factors are taken into consideration when determining the need for a shorter interval. For instance, an occupational analysis and examination outline must be updated whenever there are significant changes in a profession's job tasks and/or demands, scope of practice, equipment, technology, required knowledge, skills and abilities, or laws and regulations governing the profession (p. 4).

FINDINGS

WREB conducted the OA for the WREB dental program. The results of the study are documented in the *2019 WREB PA* report.

Occupational Analysis – Methodology and Time Frame

The purpose of the OA was to collect and analyze information on current, important, and frequently performed professional dental practices, and to document these practices to inform the content domains assessed by the WREB Dental Exam *(2019 WREB Report*, p.1*)*. The OA occurred in two stages. The first stage of the OA process used three data sources to review and gather information on procedures performed by dentists: (1) the United States Dental Procedures Frequency Data (2013-2015), (2) the Dental School Survey of Procedures Taught to Competency (2015), and (3) the WREB 2015 Examiner Practitioner Survey of Dental Practices. The second stage of the OA included an additional survey, the WREB-Central Regional Dental Testing Service (CRDTS) 2018 Practitioner Survey of Dental Practices.

> Finding 1: The OA began in 2015 and was completed in 2019. The OA was conducted within a longer than usual time frame; however, it appears that the extra time was necessary to collect sufficient data. Given the circumstances, the time frame is reasonable and legally defensible.

Occupational Analysis – Survey Instruments

In 2015, during the first stage of the OA process, WREB collected data through multiple survey instruments. The Dental School Survey of Procedures Taught to Competency was used to survey deans at dental schools across the United States. Deans were asked to identify which of the 72 dental procedures listed were taught to competence in their school. They were also asked to list any procedures that were being added or removed from their curriculum.

Additionally, a large-scale practitioner survey was developed to measure the frequency and importance of performing 24 dental procedures. The 24 dental procedures were condensed from the 72 procedures in the Dental School Survey of Procedures Taught to Competency. The initial sampling plan for the survey consisted of sending invitation emails to approximately 20,000 active dentists throughout the United States. WREB contracted with a company that claimed to have access to a nationwide database of dentists' email addresses. However, after sending out the survey through this company, no responses were received. Ultimately, the effort was unsuccessful for unknown reasons after much investigation (*2019 WREB PA*, p. 62).

To supplement this effort, the WREB 2015 Examiner Practitioner Survey of Dental Practices was developed. This survey was modeled after the large-scale practitioner survey and asked WREB examiners to rate the frequency and importance of the same 24 dental procedures.

In 2018, during the second stage of the OA process, WREB came together with CRDTS to form the 2018 CRDTS and WREB Joint Practice Analysis Committee. As a result, the WREB-CRDTS 2018 Practitioner Survey of Dental Practices was developed. This 2018 Practitioner Survey was

large-scale and asked practitioners to rate the frequency and importance of 38 dental procedures. The 38 dental procedures were condensed from the 72 procedures in the Dental School Survey of Procedures Taught to Competency.

> Finding 2: The procedures used by WREB to develop the four survey instruments appear to meet professional guidelines and technical standards.

Occupational Analysis – Sampling Plans

The Dental School Survey of Procedures Taught to Competency was sent by email invitation to 58 deans of dental schools throughout the United States, asking them to complete the survey. Deans from 35 schools responded, which was a response rate of 60% (35 of 58). Of the 35 respondents, 19 were from the Midwest and the western regions of the United States (*2019 WREB PA*, p. 10).

The WREB 2015 Examiner Practitioner Survey of Dental Practices was sent by email invitation to all active WREB dental board examiners, asking them to complete the survey. Of the 147 examiners emailed, 98 responded. This was an overall response rate of 67% (98 of 147) (*2019 WREB PA*, p. 10).

The WREB-CRDTS 2018 Practitioner Survey of Dental Practices was sent by email invitation or conventional mail to over 13,000 dentists throughout the United States. An additional 3,400 practitioners had access to the survey through a web link or were forwarded the survey by their state board. Of the 1,400 email respondents,1,238 completed the survey with enough suitable data to be included in the analysis, which was an overall response rate of 8.3%. The response rate for conventional mail respondents was 3.3%. This brought the overall response rate to 7.6% (*2019 WREB PA*, p. 11). Of the 1,238 respondents, 36% were from the western region of the United States, with 1% (17) from California.

> Finding 3: The intent of the sampling plans was reasonable and appears to meet professional standards. WREB made a noteworthy effort to gather data by using multiple surveys.

Occupational Analysis – Survey Results

After administering the surveys, WREB collected the data and analyzed the survey results.

> Finding 4: The respondents to the WREB 2015 Examiner Practitioner Survey of Dental Practices had an average of 16 or more years in practice. This high level of experience was expected because of the population sampled. The majority of respondents were general practice dentists (86.7%).

> Finding 5: The respondents to the WREB-CRDTS 2018 Practitioner Survey of Dental Practices were dentists from throughout the United States. Close to half of the respondents (46%) had been practicing fewer than 7 years. The majority of respondents were general practice dentists (78.1%).

Occupational Analysis – Decision Rules and Final Examination Outline and Contents

The 2015 WREB Practice Analysis Committee comprised eight SMEs. These SMEs were required to have "extensive state licensing board experience, board examiner experience, and/or current experience as educators in college dentistry" (*2019 WREB PA*, p. 6). Additionally, they represented a range of years of experience and were from various regions of the United States. Under the guidance of WREB's psychometrician, the SMEs worked together to review the results of the Dental School Survey of Procedures Taught to Competency and the results of the WREB 2015 Examiner Practitioner Survey of Dental Practices. In addition, the SMEs compared the results of the two surveys to the United States Dental Procedures Frequency Data. This data source captures the frequency of performance of 271 dental procedures from 12,750 general dentists throughout the United States, with an average of 199 dentists per state. The purpose of the comparison was to add support to the results.

The 2018 CRDTS and WREB Joint Practice Analysis Committee comprised a panel of eight SMEs. There were four from each agency. These SMEs were required to meet the same experience criteria as the 2015 group and also represented a range of years of experience and were from various regions of the United States (*2019 WREB PA*, p. 6). Under the guidance of CRDTS and WREB staff, the SMEs worked together to review the results of the Dental School Survey of Procedures Taught to Competency, the results of the WREB 2015 Examiner Practitioner Survey of Dental Practices, and the WREB-CRDTS 2018 Practitioner Survey of Dental Practices. Again, the SMEs compared the results of the three surveys to the United States Dental Procedures Frequency Data.

Both the 2015 and 2018 SMEs were presented with an overview of the current WREB Dental Exam and the *2007 WREB Practice Analysis for General Dentist* report. They were also given an orientation on examination validation, testing standards, and the OA process. The SMEs were then charged with evaluating and considering all of the data collected to complete the following tasks: reviewing current practice frequencies and changes in school curricula; considering how any changes to practice and curricula are reflected in the current examination; recommending immediate, gradual, or no changes to the examination; and identifying areas for further or future exploration (*2019 WREB PA*, p. 8). The findings and recommendations of the two committees were presented to the WREB Dental Exam Review Board.

The examination content outlines for the Comprehensive Treatment Planning (CTP), Operative, Endodontics, Periodontics, and Prosthodontics sections are linked to the important and frequently performed entry-level dental practices confirmed by the OA.

> Finding 6: The linkage between critical clinical dental practices required by entry-level dentists and the major content areas of the examination sections demonstrates a sufficient level of validity, thereby meeting professional guidelines and technical standards.

CONCLUSIONS

Given the findings, the OA conducted by WREB appears to meet professional guidelines and technical standards. Additionally, the development of the examination outline for the WREB Dental Exam is based on the results of the OA and appears to meet professional guidelines and technical standards.

CHAPTER 3 | EXAMINATION DEVELOPMENT

STANDARDS

Examination development includes many steps within an examination program, from the development of an examination outline to scoring and analyzing items after the administration of an examination. Several specific activities involved in the examination development process are evaluated in this section. These activities include item writing, linking items to the examination outline, and developing both the scoring criteria and examination forms.

The following standards are most relevant to examination development for licensure examinations, as referenced in the *Standards*.

> **Standard 4.7**
>
> The procedures used to develop, review, and try out items and to select items from the item pool should be documented (p. 87).
>
> **Standard 4.12**
>
> Test developers should document the extent to which the content domain of a test represents the domain defined in the test specifications (p. 89).

FINDINGS

Examination Development – Subject Matter Experts

The WREB Dental Exam sections are developed by examination committees made up of SMEs who represent the 39 WREB member states. The SMEs are required to be experienced licensed dentists who either serve or have served on a state board or are educators at accredited dental schools. Each committee includes at least one educator because of their familiarity with the curricula and the candidate population. Additionally, most SMEs have been or are WREB examiners. In order to ensure regional diversity, SMEs are rotated regularly (*2019 WREB Report*, p. 9).

> Finding 7: While the criteria used to select SMEs for item and test development are mostly consistent with professional guidelines and technical standards, OPES does not recommend that educators participate in certain examination development activities because of potential conflict of interest.
>
> Finding 8: SMEs participating in item and test development are required to sign confidentiality agreements and are instructed about examination security, which is consistent with professional guidelines and technical standards.

Examination Development – Linkage to Examination Outline

For the computer-based section of the WREB Dental Exam, Comprehensive Treatment Planning (CTP), test items are based on three patient cases of varying complexity. Items are developed by examination committees to reflect the relevant areas of the respective content outlines. The cases include patient information, medical history, radiographic images, intraoral and extraoral photographs, dental and periodontal charts, and clinical findings.

> Finding 9: The SMEs develop, review, and construct CTP items in alignment with the examination outline, which is consistent with professional guidelines and technical standards.

For the clinical sections of the WREB Dental Exam, Operative, Endodontics, Periodontics, and Prosthodontics, linkage to the respective examination content outlines consists of describing the clinical procedures to be evaluated, developing the grading criteria by which candidate performance is assessed, and ensuring that test components reflect the relative weighting of each criterion. The clinical procedures are based on the results of the OA and their respective scoring criteria and reflect different levels of ability in performing the clinical procedures employed in actual dental practice.

> Finding 10: Content development of the clinical examination sections meets professional guidelines and technical standards.

Examination Development – Item Pilot Testing

The WREB Dental Exam sections are pilot tested before regular test administrations. They are pilot tested by either students or examiners acting as candidates. After pilot testing, the results are analyzed and reviewed by an examination committee. Additionally, when new sections are released, results are held until a sufficient amount of data is collected to ensure that the section is functioning as expected (WREB, 2020).[4]

> Finding 11: The procedures used to develop, review, pilot test, and select examination content appear to meet professional guidelines and technical standards.

Examination Development – Examination Forms

The clinical WREB Dental Exam sections are based on the clinical procedures to be evaluated and the grading criteria by which candidate performance is assessed. SME consensus is used to develop the scoring weights for each clinical test. The scoring criteria are based on objective and observable outcome measures of ability related to completing the respective clinical procedure successfully. Scoring criteria are developed for five levels of ability scored 1 through 5, with 1 representing unacceptable performance, 3 representing minimal competency, and 5 representing optimal performance.

[4] (WREB, 2020) refers to WREB email communication on March 31, 2020.

The CTP section consists of three patient cases of varying complexity, including one pediatric patient. The content of each case reflects the content and weights of the examination outline. The cases have been pretested using dental students or examiners acting as candidates (WREB, 2020). In addition, linear equating or Rasch model equating is used to address variations in form difficulty (*2019 WREB Report*, p. 8).

> Finding 12: The criteria applied to create new examination forms meet professional guidelines and technical standards.
>
> Finding 13: Given the procedures used by WREB test developers, tests capable of differentiating between minimally competent and incompetent candidates for licensure should result from examination development activities. Based on WREB test developers' examination development activities, the results of WREB exams should discriminate between minimally competent and incompetent candidates for licensure.

Examination Development – Size of Item Banks

WREB recognizes the importance of having a sufficient number of items within their item banks and maintains a sufficient number of items to select from (*2019 WREB Report*, p. 8).

> Finding 14: The number of items maintained within the item banks is consistent with professional guidelines and technical standards.

CONCLUSION

Given the findings, the examination development activities conducted by WREB mostly meet professional guidelines and technical standards regarding the use of SMEs for item development and examination construction, the linkage of each item to the content outline, the pilot testing of new items, and the development of new examination forms.

CHAPTER 4 | PASSING SCORES AND PASSING RATES

STANDARDS

The passing score (i.e., cut score or cut point) of an examination is the score that represents the level of performance that divides those candidates for licensure who are minimally competent from those who are not competent.

The following standards are most relevant to passing scores for licensure examinations, as referenced in the *Standards.*

> **Standard 5.21**
>
> When proposed score interpretations involve one or more cut scores, the rationale and procedures used for establishing cut scores should be documented clearly (p. 107).

The comment associated with Standard 5.21 emphasizes its relevance:

> Chapter 5 of the *Standards*, "Scores, Scales, Norms, Score Linking, and Cut Scores," states that the standard-setting process used should be clearly documented and defensible. The qualifications of the judges involved and the process of selecting them should be part of the documentation. A sufficiently large and representative group of judges should be involved, and care must be taken to ensure that judges understand the process and procedures they are to follow (p. 101).

> **Standard 11.16**
>
> The level of performance required for passing a credentialing test should depend on the knowledge and skills necessary for credential-worthy performance in the occupation or profession and should not be adjusted to control the number or proportion of persons passing the test (p. 182).

The comment associated with Standard 11.16 emphasizes its relevance:

> Chapter 11 of the *Standards*, "Workplace Testing and Credentialing," states that the focus of tests used in credentialing is on "the standards of competence needed for effective performance (i.e., in licensure this refers to safe and effective performance in practice)" (p. 175). Chapter 11 further states, "Standards must be high enough to ensure that the public, employers, and government agencies are well served, but not so high as to be unreasonably limiting" (p. 176).

FINDINGS

Passing Scores – Process, Use of SMEs, and Methodology

The process of establishing passing scores for licensure examinations relies on the expertise and judgment of SMEs.

Passing scores for the WREB Dental Exam sections are based on standards of minimum competence developed by the examination committees and incorporated into the scale point definitions of the rating scales (1–5) used by the examiners, with the scale point 3 representing minimum competency. The minimum competence standards are determined by SMEs and reflect standards of professional behavior and performance in relation to the clinical procedures being completed by the candidates. The 6-10 members of the respective examination committee determine the standards initially, and the WREB Examination Board reviews and approves the standards. The performance standards defining the levels of ability in completing the clinical procedures range from 1, "unacceptable performance" to 5, "optimal performance." The performance standards are written as objective and observable behavior and results.

> Finding 15: The methodology used to establish the passing scores for the WREB Dental Exam sections is consistent with professional guidelines and technical standards.
>
> Finding 16: The use of SMEs to review each criterion and performance level of the WREB Exam sections meets professional guidelines and technical standards. However, OPES recommends rotating SMEs rather than using a committee for examination development, including when establishing passing scores. This strategy helps to ensure fairness and validity.

Passing Rates – WREB Dental Exam Sections

> Finding 17: OPES reviewed the first-time passing rates for the 2018 WREB Dental Exam sections. OPES found that the passing rates meet expectations for similar examinations for the dentistry profession.

CONCLUSION

Given the findings, the passing score methodologies conducted by WREB demonstrate a sufficient degree of validity to meet professional guidelines and technical standards.

CHAPTER 5 | TEST ADMINISTRATION

STANDARDS

The following standards are most relevant to standardizing the test administration process for licensing examinations, as referenced in the *Standards.*

Standard 3.4

Test takers should receive comparable treatment during the test administration and scoring process (p. 65).

Standard 4.15

The directions for test administration should be presented with sufficient clarity so that it is possible for others to replicate the administration conditions under which the data on reliability, validity, and (where appropriate) norms were obtained. Allowable variations in administration procedures should be clearly described. The process for reviewing requests for additional testing variations should also be documented (p. 90).

Standard 4.16

The instructions presented to test takers should contain sufficient detail so that test takers can respond to a task in the manner that the test developer intended. When appropriate, sample materials, practice or sample questions, criteria for scoring, and a representative item identified with each item format or major area in the test's classification or domain should be provided to the test takers prior to the administration of the test, or should be included in the testing material as part of the standard administration instructions (p. 90).

Standard 6.1

Test administrators should follow carefully the standardized procedures for administration and scoring specified by the test developer and any instructions from the test user (p. 114).

Standard 6.2

When formal procedures have been established for requesting and receiving accommodations, test takers should be informed of these procedures in advance of testing (p. 115).

Standard 6.3

Changes or disruptions to standardized test administration procedures or scoring should be documented and reported to the test user (p. 115).

Standard 6.4

The testing environment should furnish reasonable comfort with minimal distractions to avoid construct-irrelevant variance (p. 116).

Standard 6.5

Test takers should be provided appropriate instructions, practice, and other support necessary to reduce construct-irrelevant variance (p. 116).

Standard 8.1

Information about test content and purposes that is available to any test taker prior to testing should be available to all test takers. Shared information should be available free of charge and in accessible formats (p. 133).

Standard 8.2

Test takers should be provided in advance with as much information about the test, the testing process, the intended test use, test scoring criteria, testing policy, availability of accommodations, and confidentiality protection as is consistent with obtaining valid responses and making appropriate interpretations of test scores (p. 134).

FINDINGS

Test Administration – Candidate Registration

Candidates register to take the WREB Dental Exam sections through their online candidate profiles. The 2020 Application Process page found on WREB's website provides instructions and information regarding:

- Application process overview
- Candidate photo requirements
- Proof of qualifications documents
- Online application process
- Paying for an examination
- Wait-list status
- Re-examination

For the CTP section, once registration and payment have been processed, candidates receive an email with instructions on how to contact Prometric, the testing vendor, to schedule the examination. For the clinical examination sections, candidates register through their online profile by selecting the examination date and dental school. Candidates can refer to the WREB website for the list of examination dates and participating dental schools.

Finding 18: WREB's registration process appears straightforward. The information available to candidates is detailed and thorough. The candidate registration process appears to meet professional guidelines and technical standards.

Test Administration – Accommodation Requests

WREB approves accommodation requests under the Americans with Disabilities Act. Candidates requesting accommodation must submit a Request Form and documentation at least 45 days before the exam.

Finding 19: WREB's accommodation procedure appears to meet professional guidelines and technical standards.

Test Administration – Test Centers and Test Sites

Candidates take the CTP exam section at a Prometric test center. Prometric test centers are located throughout the United States and run by trained proctors. Candidates take the clinical exam sections at various dental schools on specified dates throughout the year.

Finding 20: Candidates have access to various Prometric test centers with trained proctors and standardized testing conditions.

Finding 21: Candidates have access to various participating dental schools with trained examiners and standardized testing conditions.

Test Administration – Directions and Instructions to Candidates

The WREB website provides information about the WREB Dental Exam. The two candidate manuals provided by WREB, the 2018 Comprehensive Treatment Planning Exam Candidate Guide (*2018 CTP CG*) and the 2018 Dental Exam Candidate Guide (*2018 CG*), provide detailed information to candidates about:

- Exam overview and exam procedures for each section
- Malpractice insurance requirements
- Exam materials and instruments
- Patient selection
- Reporting to the test center and test site
- Candidate exam guide
- Test center and test site procedures
- Security procedures
- Standards of conduct
- Infection control requirements
- Exam scoring criteria

Finding 22: The directions and instructions provided to candidates appear straightforward. The information available to candidates is detailed and thorough.

Test Administration – Standardized Procedures and Testing Environment

WREB administers each of its clinical exam sections 34 times per year. The clinical exam sections are administered on 30 dental school campuses throughout the United States. The CTP section is administered by Prometric at its test centers located throughout the United States.

Finding 23: WREB, using dental school campuses and Prometric facilities, provides candidates access to test centers across the United States with trained proctors and examiners.

CONCLUSION

Given the findings, the test administration protocols put in place by WREB appear to meet professional guidelines and technical standards.

CHAPTER 6 | EXAMINER TRAINING, SCORING, AND PERFORMANCE STANDARDS

STANDARDS

The following standards are most relevant to examiner training, test scoring, and performance for licensing examinations, as referenced in the *Standards.*

Standard 2.3

For each total score, subscore, or combination of scores that is to be interpreted, estimates of relevant indices of reliability/precision should be reported (p. 43).

Standard 4.10

When a test developer evaluates the psychometric properties of items, the model used for that purpose (e.g., classical test theory, item response theory, or another model) should be documented. The sample used for estimating item properties should be described and should be of adequate size and diversity for the procedure. The process by which items are screened and the data used for screening, such as item difficulty, item discrimination, or differential item functioning (DIF) for major examinee groups, should also be documented. When model-based methods (e.g., IRT) are used to estimate item parameters in test development, the item response model, estimation procedures, and evidence of model fit should be documented (pp. 88-89).

Standard 4.20

The process for selecting, training, qualifying, and monitoring scorers should be specified by the test developer. The training materials, such as the scoring rubrics and examples of test takers' responses that illustrate the levels on the rubric score scale, and the procedures for training scorers should result in a degree of accuracy and agreement among scorers that allows the scores to be interpreted as originally intended by the test developer. Specifications should also describe processes for assessing scorer consistency and potential drift over time in raters' scoring (p. 92).

Standard 4.21

When test users are responsible for scoring and scoring requires scorer judgment, the test user is responsible for providing adequate training and instruction to the scorers and for examining scorer agreement and accuracy. The test developer should document the expected level of scorer agreement and accuracy and should provide as much technical guidance as possible to aid test users in satisfying this standard (p. 92).

Standard 6.8

Those responsible for test scoring should establish scoring protocols. Test scoring that involves human judgment should include rubrics, procedures, and criteria for scoring. When scoring of complex responses is done by computer, the accuracy of the algorithm and processes should be documented (p. 118).

FINDINGS

Examiner Selection and Training

WREB examiners are typically state board members and dental educators, who are licensed and in good standing. Each examiner is required to complete an 8–10-hour training and self-assessment. In addition, examiners attend orientation and calibration before each examination. The calibration process requires examiners to practice scoring until their judgments reach an acceptable level of agreement. After an examination, examiners are given feedback on their performance. "Examiners with low percentages of agreement, high percentages of harshness or lenience, or erratic grading patterns are counseled, remediated and monitored to ensure increased understanding of definitions. Continued lack of agreement may result in dismissal from the examination pool" (*2019 WREB Report*, p. 33).

Finding 24: The selection and training of examiners for the WREB Dental Exam appears to meet professional guidelines and technical standards. OPES typically does not support the use of board members and educators in examination development, administration and scoring activities because of potential conflict of interest. However, after further discussions with WREB, OPES accepted use of board members and educators because of the following findings: (a) graders and candidates do not interact and are not identified by name; (b) conflict of interest forms are signed; (c) three graders are involved in the scoring process; (d) extensive calibration training is provided; (e) a psychometrician is employed to ensure testing standards are applied; and (f) the examination process is transparent and clearly articulated in the candidate guide.

Examination Scoring

Three grading examiners score each of the WREB Dental Exam sections. The median score is used to determine an individual score for each exam section, and those scores are then combined for a final conjunctive score. Grading examiners have no interaction with candidates "to provide total anonymity to remove possible bias from the scoring of candidate work" (*2018 CG*, p. 12). The *2019 WREB Report* provides more detailed information about the scoring process.

Finding 25: The scoring criteria are applied equitably to ensure the validity and reliability of the examination results and are evaluated often. The test scoring process meets professional guidelines and technical standards.

Examination Performance

Classical item analysis statistics are calculated and reviewed for each examination section. Rasch analysis of the results of the rating process are also performed for each of the examination sections. For the Comprehensive Treatment Planning (CTP) section, scores are scaled to account for differences in form difficulty. The purpose of scaled scores is to account for form difficulty, to ensure that scores across forms hold the same meaning, and to ensure fairness among candidates (*2019 WREB Technical Report, p. 30*).

> Finding 26: The use of scaled scores, examination-level statistics, item-level statistics, decision consistency reliability, and examiner agreement are consistent with professional guidelines and technical standards.

CONCLUSIONS

The steps taken by WREB to score the WREB Dental Exam appear to provide for a fair and objective evaluation of candidate performance. The steps taken by WREB to evaluate examination performance appear to meet professional guidelines and technical standards.

CHAPTER 7 | TEST SECURITY

STANDARDS

The following standards are most relevant to test security for licensure examinations, as referenced in the *Standards.*

Standard 6.6

Reasonable efforts should be made to ensure the integrity of test scores by eliminating opportunities for test takers to attain scores by fraudulent or deceptive means (p. 116).

Standard 6.7

Test users have the responsibility of protecting the security of test materials at all times (p. 117).

Standard 8.9

Test takers should be made aware that having someone else take the test for them, disclosing confidential test material, or engaging in any other form of cheating is unacceptable and that such behavior may result in sanctions (p. 136).

Standard 9.21

Test users have the responsibility to protect the security of tests, including that of previous editions (p. 147).

FINDINGS

Test Security – The WREB Dental Exam Clinical Sections

WREB has implemented test site and examination security policies and procedures for the clinical exam sections. The 2018 Dental Exam Candidate Guide outlines for candidates what constitutes improper and unethical conduct on the part of candidates and the consequences of such actions. Additional information about what is expected at the examination can be found on the WREB website: 2020 Important Exam Information.

Finding 27: The examination security protocols pertaining to test administration of the clinical examination sections meet professional guidelines and technical standards.

Test Security – WREB and Prometric Testing Vendor

Candidates take the CTP exam section at a Prometric test center via computer in a secure testing room. They must bring two forms of personal identification with them to the test center (one with a photo, both with a signature). Candidates are prohibited from bringing any personal items into the secure room. Candidates are monitored during testing by Prometric proctors. Prometric test center administrators receive enhanced security training on test delivery, test center communications, check-in and check-out procedures, managing in-test questions and issues, and monitoring the testing room. Other test safety measures taken by Prometric include metal detection wands to scan for prohibited devices, digital video recordings of the testing area, and various ID management verifications.

> Finding 28: Prometric, through its internal test administration and security protocols, provides a robust framework of test site and examination security policies and procedures.

CONCLUSION

Given the findings, the test security policies, procedures, and protocols meet professional guidelines and technical standards.

CHAPTER 8 | COMPARISON OF THE CALIFORNIA DENTIST EXAMINATION OUTLINE WITH THE WREB EXAMINATION OUTLINE AND EXAMINATION CONTENTS

PARTICIPATION OF SUBJECT MATTER EXPERTS

OPES convened a two-day meeting on February 27-28, 2020 to critically evaluate and compare the following items:

- The task and knowledge statements of the California dentist examination outline resulting from the 2018 California Dentist OA.
- The examination outline and examination contents of the WREB Dental Exam, CTP section.
- The examination outline and examination contents of the WREB Dental Exam – Operative, Endodontics, Periodontics, and Prosthodontics sections.

The Board, with direction from OPES, recruited eight dentists to participate as SMEs.

The SMEs represented both northern and southern California. Two of the SMEs had been licensed for 5 years, three had been licensed 6–10 years, and three had been licensed 11–19 years. All SMEs worked as dentists in various settings.

WORKSHOP PROCESS

First, the SMEs completed OPES' security agreement, self-certification, secure area agreement, and personal data (demographic) forms. The OPES test specialist explained the importance of security during and outside the workshop, and explained security guidelines. The SMEs were then asked to introduce themselves.

Next, the OPES test specialist gave a PowerPoint presentation about the purpose and importance of occupational analysis, validity, reliability, test administration standards, examination security, and the role of SMEs. The OPES test specialist also explained the purpose of the workshop.

The SMEs were then asked to review the parts of the B&P Code and the California Code of Regulations (CCR) relating to the scope of practice, qualifications, and examination requirements for dentists. They were informed that the purpose of reviewing these documents was to acquire an understanding of California's examination requirements, and they were asked to use this understanding when assessing the WREB Dentist Exam examination outline and examination contents.

After reviewing the B&P Code and the CCR, the SMEs were instructed to evaluate and link each task and knowledge statement of the California dentist examination outline to the WREB Dentist Exam examination outline and examination contents.

The OPES test specialist then split the eight SMEs into 4 groups. The first group of SMEs was assigned content areas 1–4 of the California dentist examination outline. The second group of three SMEs was assigned to content areas 5–8 of the California dentist examination outline. The third group of two SMEs was assigned to content areas 9–12 of the California dentist examination outline. The fourth group of two SMEs was assigned to content areas 13–16 of the California dentist examination outline. Each group was also assigned the examination contents of the WREB Dental Exam sections to link to the California examination outline.

The SMEs performed their linkages within their independent groups. Each group worked separately to document their linkages on an electronic spreadsheet. They were provided with only the task and knowledge statements of the content areas assigned to them. The groups were instructed to flag statements that they had questions about or could not find a related task or knowledge statement for.

Once all four groups completed their respective linkages, each group evaluated the linkages of another group. The purpose of this secondary verification was to provide additional validation evidence. Again, the groups were instructed to flag statements if they had questions about them, could not find linkages to them, disagreed with the linkages made for them by the previous group, or wanted them discussed by the entire group.

After completing the linkages, the SMEs reconvened as one group and discussed all the statements that had been flagged. The SMEs also reviewed the linkages of the five exam sections. Task and knowledge statements that were linked by two or more groups were considered validated linkages. If only one group indicated a linkage, then that task or knowledge statement was reviewed and evaluated.

The content domains of the WREB Dental Exam examination outline are provided in Tables 1 through 5. Table 6 provides the content areas of the 2018 California dentist examination outline.

TABLE 1 – COMPREHENSIVE TREATMENT PLANNING SECTION

Restorative Treatment
Removable Prosthodontics
Periodontal Treatment
Endodontics Treatment
Surgery
Prescription Writing
Follow-up/Prognosis/Maintenance
Diagnosis, Etiology and Treatment Planning

TABLE 2 – OPERATIVE SECTION

Direct posterior Class II amalgam (MO, DO or MOD)	At least one II Class procedure required
Direct posterior Class II composite restoration (MO, DO or MOD)	
Indirect posterior Class II cast gold restoration (up to and including a ¾ crown)	
Direct Class III composite restoration (ML, DL, MF, DF)	Optional, if combined with a Class II

TABLE 3 – ENDODONTICS SECTION

Anterior Tooth: Access, Instrumentation, Obturation
Posterior Tooth: Access

TABLE 4 – PERIODONTICS SECTION

Scaling and Root Planing (minimum eight qualifying surfaces)

TABLE 5 – PROSTHODONTICS SECTION

Preparation of Anterior Tooth for Full Coverage Crown
Preparation of Two Abutments for Posterior Three-unit Partial Denture Prosthesis

TABLE 6 – CONTENT AREAS OF THE 2018 CALIFORNIA DENTIST EXAMINATION OUTLINE

	Content Area	Content Area Description	Weight
1.	Patient Evaluation	This area assesses the candidate's ability to conduct a medical and dental evaluation to develop a comprehensive dental treatment plan for the patient.	13%
2.	Endodontics	This area assesses the candidate's ability to diagnose the patient's endodontic condition, develop a treatment plan, and perform endodontic therapy.	6%
3.	Indirect Restoration	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and perform an indirect restoration.	7%
4.	Direct Restoration	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and perform a direct restoration.	7%
5.	Preventative Care	This area assesses the candidate's ability to perform prophylactic, preventative procedures, and provide oral hygiene instructions to patients.	5%
6.	Periodontics	This area assesses the candidate's ability to diagnose the patient's periodontal condition, develop a treatment plan, and perform periodontal therapy.	4%
7.	Fixed Partial Dentures	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and prepare a fixed partial denture.	6%
8.	Removable Partial Dentures	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and design and deliver a removable partial denture.	4%
9.	Complete Dentures	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and design and deliver a complete denture.	4%

Content Area	Content Area Description	Weight
10. Implant Restoration	This area assesses the candidate's ability to diagnose the patient's restorative needs, develop a treatment plan, and deliver an implant restoration.	3.5%
11. Oral Surgery	This area assesses the candidate's ability to diagnose the patient's oral condition, develop a treatment plan, and perform oral surgical procedures.	5%
12. Teeth Whitening	This area assesses the candidate's ability to perform teeth whitening procedures on a patient.	2%
13. Occlusal Splint Therapy	This area assesses the candidate's ability to determine a patient's need for occlusal splint therapy and to perform occlusal splint therapy procedures.	3%
14. Safety and Sanitation	This area assesses the candidate's ability to prevent injury and the spread of diseases in dental services by following Board regulations on safety, sanitation, and sterilization.	10.5%
15. Ethics	This area assesses the candidate's ability to comply with ethical standards for dentistry, including scope of practice and professional conduct.	7%
16. Law	This area assesses the candidate's ability to comply with legal obligations, including patient confidentiality, professional conduct, and information management.	13%
Total		**100%**

FINDINGS

The SMEs performed a comparison between the task and knowledge statements of the 2018 California dentist examination outline and the examination outline and examination contents of the WREB Dental Exam sections. The SMEs concluded that all except two topic areas were congruent in assessing the general knowledge required for entry-level dentistry practice in California.

> Finding 29: All except two content areas were congruent in assessing the general knowledge required for entry-level dentistry practice in California.
>
> The two content areas that could not be fully linked to the WREB Dental Exam were:
>
> - Content Area 15 Ethics
> - Content Area 16 Law
>
> Finding 30: During the workshop, the SMEs also discussed the use of patients versus the use of non-patients such as simulated teeth, full mouth models, or manikins for each of the examination sections. The group discussed the benefits of both methods but did not come to consensus that one method was clearly superior.

CONCLUSIONS

Overall, the SMEs concluded that the content of the WREB Dental Exam assesses what a California dentist is expected to have mastered at the time of licensure. The two content areas not fully assessed were California law and ethics. Because California already administers a law and ethics examination, OPES recommends continued development and administration of this California-specific examination.

CHAPTER 9 | CONCLUSION

COMPREHENSIVE REVIEW OF THE WREB DENTAL EXAM

OPES completed a comprehensive analysis and evaluation of the documents provided by WREB. The procedures used to establish and support the validity and defensibility of the WREB Dental Exam (i.e., OA, examination development, passing scores and passing rates, test administration, examination scoring and performance, and test security) were found to meet professional guidelines and technical standards outlined in the *Standards* and B&P Code § 139. Additionally, the use of the WREB Dental Exam for licensure in dentistry in California was found to meet the requirements of the Dental Board of California under B&P Code §§ 1630 and 1632.

Based on SME evaluation, OPES believes that the content of the WREB Dental Exam is congruent with entry-level California dentistry practice with the exception of California law and ethics. If the Board continues to use the WREB Dental Exam for licensure in California, the Board should also continue requiring candidates to pass the California Dentistry Law and Ethics Examination.

CHAPTER 10 | REFERENCES

American Educational Research Association, American Psychological Association, National Council on Measurement in Education, and Joint Committee on Standards for Educational and Psychological Testing. (2014). *Standards for educational and psychological testing*.

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CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY • GAVIN NEWSOM, GOVERNOR

DENTAL BOARD OF CALIFORNIA
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MEMORANDUM

DATE	July 24, 2023
TO	Members of the Dental Board of California
FROM	Tracy A. Montez, Ph.D., Executive Officer Dental Board of California
SUBJECT	**Agenda Item 24.b.:** Presentation, Discussion, and Possible Action on the Portfolio Examination Report by the Office of Professional Examination Services

Background

Licensing boards and bureaus within the California Department of Consumer Affairs (DCA) are required to ensure that examination programs used in California licensure comply with psychometric and legal standards. To become a licensed dentist in California, a candidate must have the requisite education and experience, pass the Integrated National Board Dental Examination and the California Dental Law and Ethics Examination, and complete one of the following four pathways:

1. Pass the Dental Board of California Dental Portfolio Examination
2. Pass the CDCA-WREB-CITA Dental ADEX Examination (ADEX)
3. Obtain Licensure by Credential
4. Obtain Licensure by Residency

The Dental Board of California (Board) requested that DCA's Office of Professional Examination Services (OPES) review the Dental Board of California Dental Portfolio Examination (Portfolio) for continued use in California licensure of dentists.

OPES reviewed information provided by the Board, which included documents regarding practices and procedures used to develop and validate the Portfolio. OPES conducted a comprehensive evaluation of these documents to determine whether the following Portfolio components met professional guidelines and technical standards: (a) occupational analysis (OA), (b) examination development and scoring, (c) passing scores and passing rates, (d) test administration, and (e) test security procedures.

Although the Portfolio appears to meet professional guidelines and technical standards, and links to the California dentist description of practice, OPES has concerns about its continued use for California licensure of dentists. OPES recognizes that the Portfolio was an innovative and novel concept at the time of its development and implementation in 2014. The original objectives of the Portfolio were 1) to offer candidates an alternative pathway to a standalone examination and 2) to eliminate the need for candidates to obtain patients for an examination. However, most candidates opt to take a standalone examination rather than the Portfolio, possibly due to scheduling logistics and the lack of reciprocity with other states. Additionally, because standalone examinations have incorporated innovations and have now moved to manikin-based examinations, candidates are no longer required to obtain patients. As a result, the Portfolio does not appear to serve its intended purpose, and it does not provide the level of standardization and reciprocity provided by the ADEX.

A more significant concern, however, is the lack of examination development, lack of psychometric evaluation, and lack of examiner audits that have occurred since the Portfolio launched in 2014. If the Board continues offering the Portfolio, additional development work is required to bring it up to date. Updating the Portfolio will require an extensive investment of time, staffing, and fiscal resources from the Board and the industry. If the Board is willing to invest the necessary resources to perform the required development work, there is no assurance that candidates will choose this pathway to licensure given the other alternatives available, i.e., passing the ADEX, licensure by credential, licensure by residency.

For these reasons, continuing to offer the Portfolio in its current form is inadvisable. OPES recommends that the Board initiate a process to eliminate the Portfolio as a pathway to licensure.

Board staff concur with the recommendation from OPES to eliminate the Portfolio as a pathway to licensure.

Action Requested

The Board is asked to discuss the findings from review of the Dental Board of California Dental Portfolio Examination for continued use in California licensure of dentists. If the Board agrees with both staff and OPES' recommendation, staff is requesting that the Board move forward to include a legislative proposal to eliminate the Portfolio examination in the Board's Sunset Review Report submitted to the California State Legislature. Provided below are the Board's options.

Suggested Motions

Option 1 (support the recommendation): Move to recommend inclusion in the Board's Sunset Review Report the legislative proposal to amend Business and Professions Code sections 1632, 1632.5 and 1632.55 and repeal section 1632.1.

Option 2 (offer a revised directive): Move to direct Board staff to take another action as discussed during this meeting [insert specific revisions].

Option 3 (No motion): If the Board does not wish to act on this proposal, no motion is necessary.

Attachment

Review of the Dental Board of California Dentist Portfolio Examination

Proposed Legislative Proposal text amending Business and Professions Code sections 1632, 1632.5, and 1632.55, and repeal section 1632.1

CDCA WREB CITA

One agency. One mission. One national exam.

May 1, 2023

The WREB dental examination and the ADEX dental examination were both developed to evaluate the same dental clinical skills and abilities, including the ability to make appropriate diagnostic assessments and professional judgments critical for the practice of dentistry by competent, entry-level oral health care providers. Both examinations have been developed and administered in accordance with professional standards of testing, which include the collection of evidence supporting the validity of examination content and fidelity to the intended measurement construct. Technical evaluations have been conducted regularly for both examinations and the most recent independent psychometric reviews conducted by the state of California were in 2019, for the WREB dental examination, and the ADEX dental examination.

The WREB Dental Examination Committee reviews and updates, on an annual basis, the content, criteria and scoring for the exam. With the merger of WREB and the CDCA, this committee of subject matter experts, informed by psychometric analyses of data from both examinations, determined that the WREB dental examination would adopt the content, criteria, and scoring of ADEX exam components for the completion of WREB exams started by candidates in 2022 (see table on page 2).

The WREB Dental Exam is not being marketed to new candidates as of 1/1/2023. Individual components of the WREB Dental Exam are offered for candidates who started but were unable to complete the WREB Dental Exam series in 2022. The WREB Dental Examination Committee will sunset at the end of 2023, or sooner, based on candidate eligibility to complete the 2022 WREB Dental Exam series.

Benjamin E. Wall, DDS
Director of Examinations

Direct: 443.270.3076
Main: 410.563.3300
Email: bwall@adextesting.org

WREB and ADEX: Major Components Assessed with each Dental Examination Section.

Examination Section	WREB Major Components	ADEX Major Components
Treatment Planning/Diagnosis	Case-based 3-hour computerized exam (CTP)	Case-based 4-hour computerized exam (DSE-OSCE)
Restorative	Anterior Restoration Posterior Restoration	Anterior Restoration Posterior Restoration
Endodontic	Anterior Access and Obturation; Posterior Access	Anterior Access and Obturation; Posterior Access
Prosthodontic	Ceramic Crown Two abutments for Posterior Fixed Partial Denture (PFM and Cast Metal)	Ceramic Crown Two abutments for Posterior Fixed Partial Denture (PFM and Cast Metal)
Periodontal	Periodontal Scaling of one Quadrant	Periodontal Scaling of one Quadrant

DENTAL BOARD OF CALIFORNIA

REPORT TO CALIFORNIA STATE LEGISLATURE
REGARDING
FINDINGS RELEVANT TO INFORM DENTAL ANESTHESIA AND SEDATION STANDARDS

December 2021

(As required by SB 501 (Glazier, Ch 929, Stats. 2018);
Bus. & Prof. Code, § 1601.4, subd. (a)(2))

Members of the Dental Board of California

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Rosalinda Olague, RDA, BA, Vice President

Alan Felsenfeld, MA, DDS, Secretary

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Sonia Molina, DMD, MPH

Alicia Montell, DDS

Steven Morrow, DDS, MS

Thomas Stewart, DDS

James Yu, DDS, MS

EXECUTIVE SUMMARY

The Dental Board of California (Board) submits this Report to California State Legislature Regarding Findings Relevant to Inform Dental Anesthesia and Sedation Standards as required by Senate Bill (SB) 501 (Glazer, Chapter 929, Statutes of 2018) and Business and Professions Code (BPC) section 1601.4, subdivision (a)(2).

The first half of the report summarizes the Board's statistical findings regarding adverse events reported to the Board after the administration of anesthesia and/or sedation before or during dental procedures. The adverse events reported to the Board were submitted by dental licensees, physicians and surgeons, anesthesiologists, and other various reporting sources from the period of January 1, 2017, to June 30, 2021. The Board will continue to collect information on adverse effects of all sedation levels in dentistry, and the next Board report regarding pediatric deaths related to general anesthesia and deep sedation in dentistry will be submitted to the California State Legislature at the time of the Board's Sunset Review pursuant to the requirements of BPC section 1601.4, subdivision (b).

The second half of the report discusses relevant professional guidelines, recommendations, or best practices for the provision of dental anesthesia and sedation care and how they compare to California laws and regulations effective January 1, 2022.

This report concludes that with the implementation of new minimal, moderate, and deep sedation and general anesthesia provisions enacted by SB 501 that become effective on January 1, 2022, California will have some of the highest patient monitoring standards for the administration of minimal, moderate, and deep sedation and general anesthesia to dental patients of all age groups and especially for children. California statutes meet and generally exceed the guidelines of all the organizations that are involved in the administration of anesthesia to children in dental offices.

INTRODUCTION

In 2018, SB 501 (Glazer, Chapter 929, Statutes of 2018) amended BPC section 1601.4, subdivision (a), to require the Board to review available data on all adverse events related to general anesthesia and deep sedation, moderate sedation, and minimal sedation in dentistry and relevant professional guidelines, recommendations, or best practices for the provision of dental anesthesia and sedation care. SB 501, among other things, also required the Board, by January 1, 2022, to report to the California State Legislature any findings relevant to inform dental anesthesia and sedation standards. This report is submitted in accordance with this requirement.

BPC section 1680, subdivision (z), requires licensees to report the death of a patient during the performance of any dental or dental hygiene procedure, the discovery of a death of a patient whose death is related to dental or dental hygiene procedure performed by the licensee, or, 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. In addition, this section requires the licensee to report a death or hospitalization when sedation and/or anesthesia is used for a dental procedure on a form approved by the Board and include all of the following information:

- 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.

In response to Assembly Bill (AB) 2235 (Thurmond, Chapter 519, Statutes of 2016), the Board created the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization". The form is available on the Board's website.

STATISTICAL FINDINGS

The Board attempted to gather information from other state dental boards, however data regarding adverse events associated with anesthesia and/or sedation varies from state to state which therefore limits the value of the data. Instead, the Board will focus this report on the data received via the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization" within the State of California.

Below are charts showing the statistical findings regarding adverse events after the administration of anesthesia and/or sedation before or during dental procedures. The data is based on the incident reports submitted by dental licensees, physicians and surgeons, anesthesiologists and other various reporting sources from the period of January 1, 2017, to June 30, 2021.

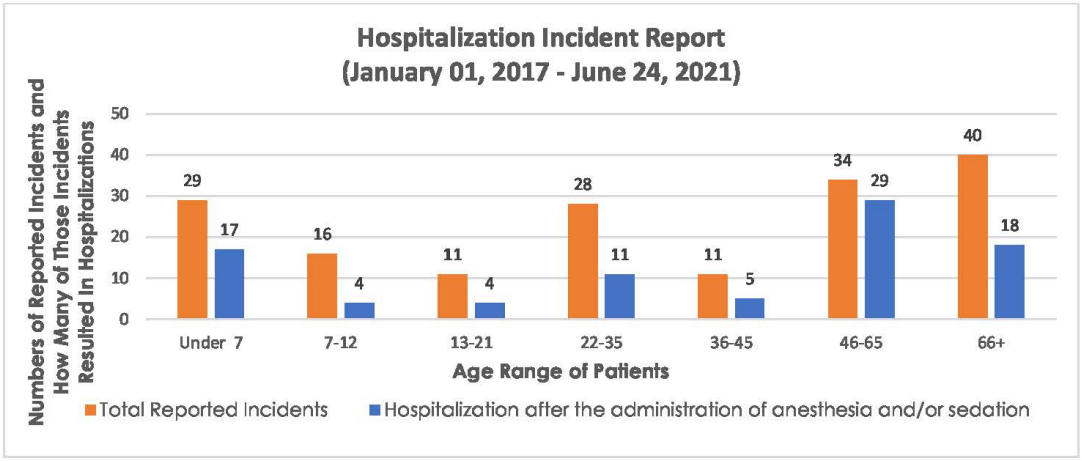
The Board presents its findings and provides a breakdown of the incident reports, which include the number of patient deaths and hospitalizations that may have been a result of complications due to any anesthesia and/or sedation used for the patient's dental procedure. For this reporting period, the Board has received a total of 210 incident reports. Of the 210 incident reports received, the Board has determined that a total of 88 reports included incidents in which anesthesia or sedation was administered and the patient was hospitalized, and 23 reports in which anesthesia or sedation was administered and the patient passed away during or shortly after the dental procedure. The data has been categorized by age group with the assistance of the Board's subject matter experts.

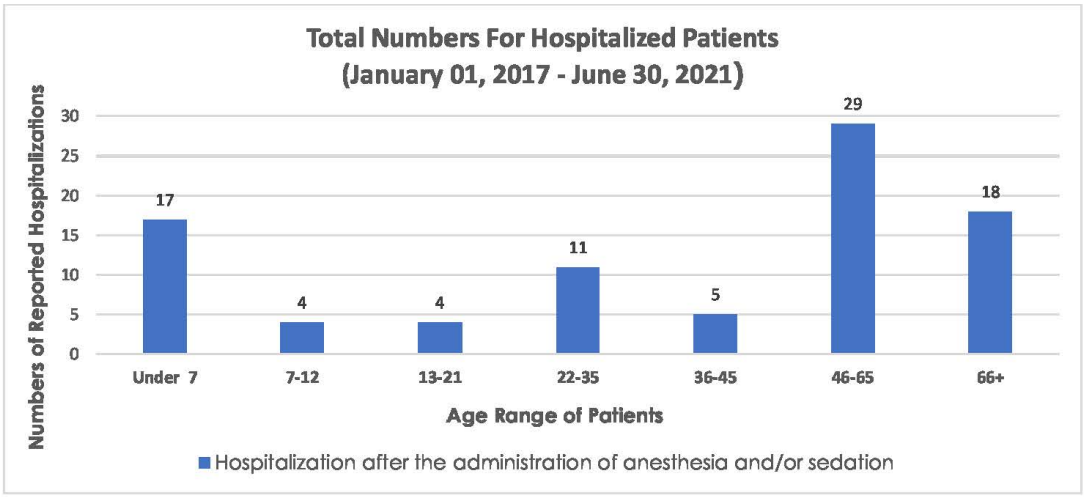
The different age groups are broken down as follows:

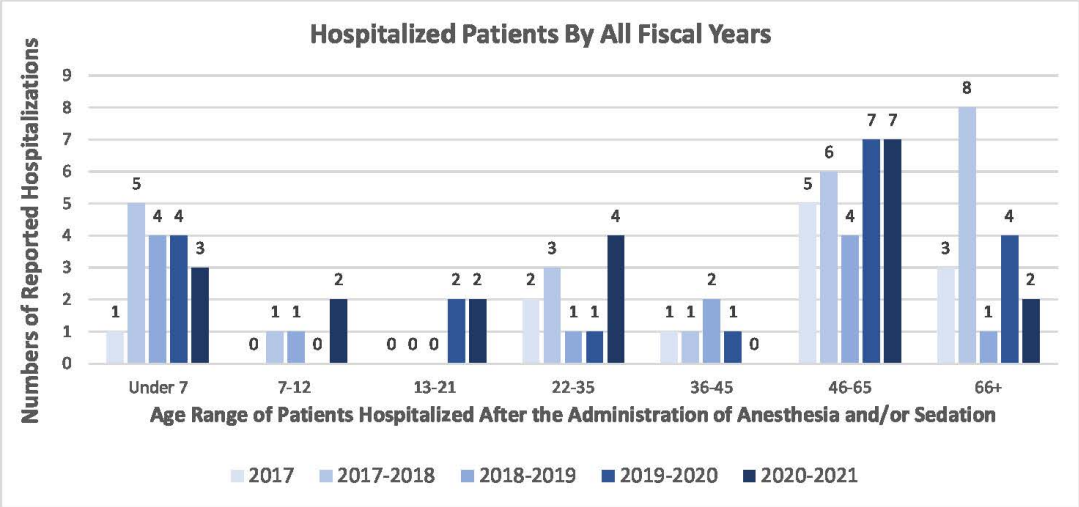
- Pediatric (Under 7 years)
- Older Pediatric (Ages 7-12)
- Adolescents (Ages 13-21)
- Young Adults (Ages 22-35)
- Adults (Ages 36-45)
- Middle-Aged (Ages 46-65)
- Senior (Ages 66+)

The data is sorted by fiscal year and includes the patient's age, sex, ASA physical status, if the patient had any coexisting diagnoses, the setting where the sedation and dental procedure took place, and the category of the provider responsible for sedation oversight.

Hospitalization Incident Reports by Age Group



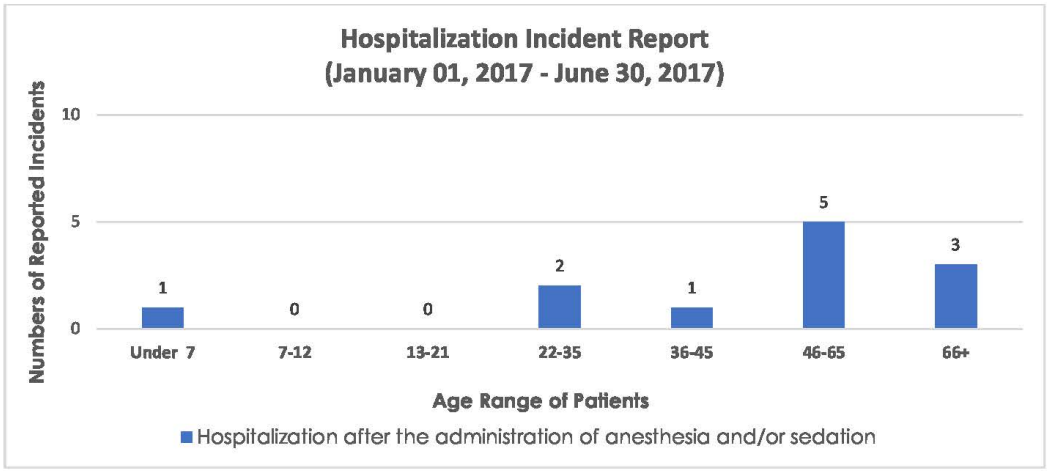


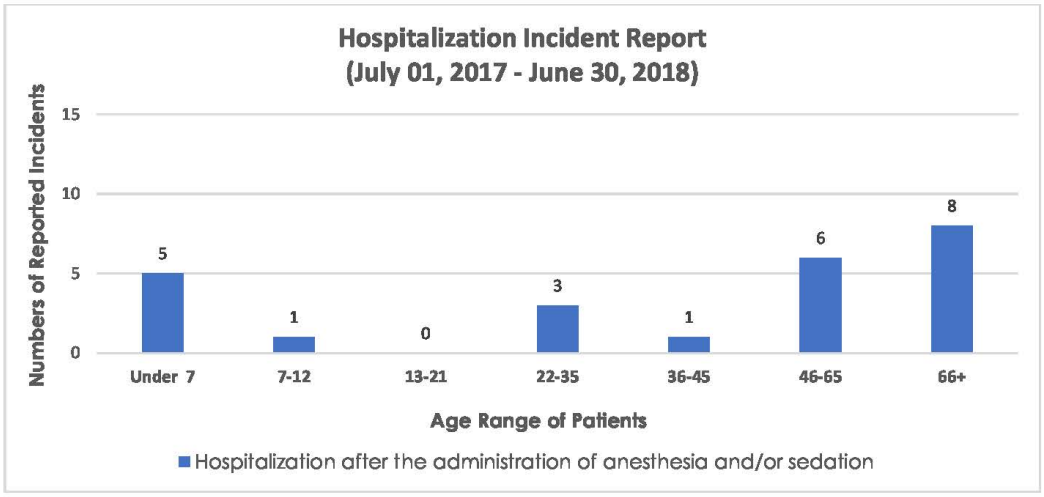


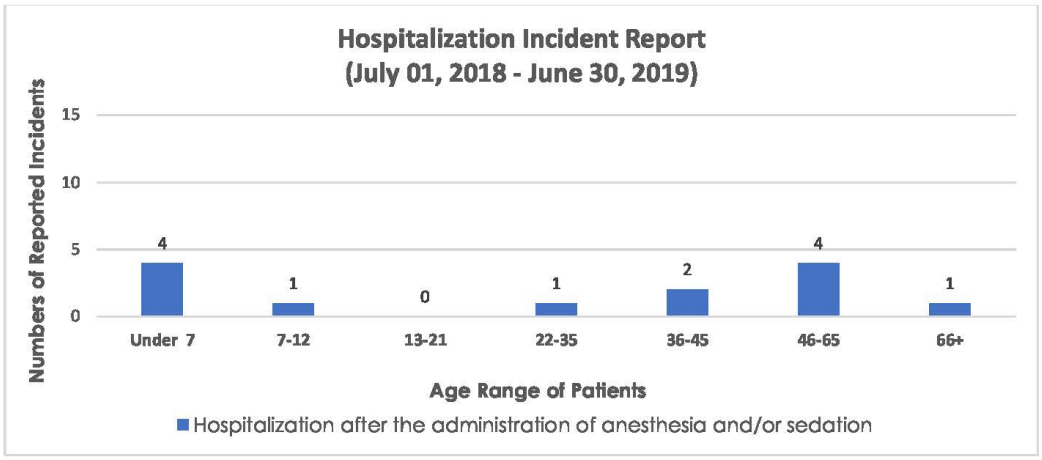
- The first chart reflects the total numbers of incident reports, and of those reports, how many patients were hospitalized after the administration of anesthesia and/or sedation during a four and one half-year span. The second chart is a reiteration of the first chart but represents the total numbers of reported hospitalizations for that same time frame. The third chart represents the numbers of patients hospitalized throughout the various fiscal years via their age groups. This chart is presented to provide a comparison of any possible trends during this period.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of 29 incident reports, and of those of 29, 17 were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For older pediatric patients ages 7-12, there were a total of 16 incident reports, and of those 16, six were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For adolescent patients ages 13-21, there were a total of 11 incident reports, and of those 11, four were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For young adult patients ages 22-35, there were a total of 28 incident reports and of those 28, 11 were hospitalized possibly due to anesthesia and/or sedation related treatment.

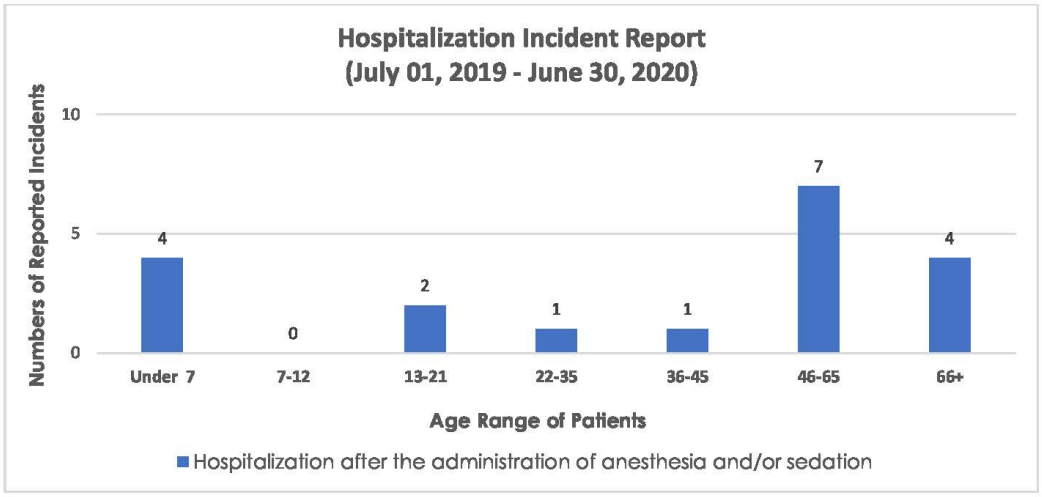
- For adult patients ages 36-45, there were a total of 11 incident reports, and of those 11, five were hospitalized possibly due to anesthesia and/or sedation related treatment.
- For middle-aged patients ages 46-65, there were a total of 34 incident reports, and of those 34, 29 were hospitalized possibly to due anesthesia and/or sedation related treatment.
- For senior patients ages 66 and up, there were a total of 40 incident reports, and of those 40, 18 were hospitalized possibly to due anesthesia and/or sedation related treatment.

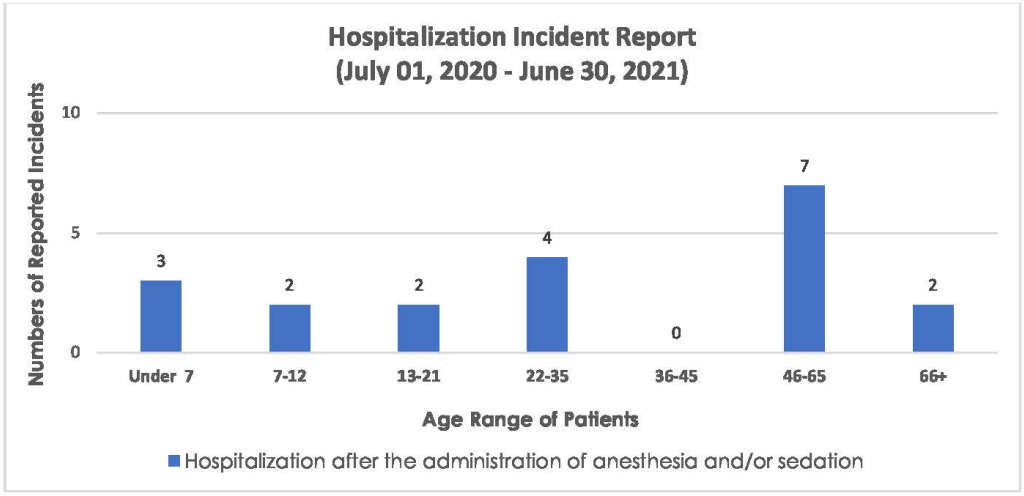
- From the date of the initial mandate (January 2017) through June 24, 2021, this is the data that the Board has for hospitalization due to possible complications from the administration of anesthesia and/or sedation before and during the patient's dental procedure. The specific reports indicate that anesthesia and/or sedation were given before or during the procedure prior to hospitalization. However, the reason for hospitalization may have been due to outside factors and not due to administration of anesthesia and/or sedation. Accordingly, the term "possibly" is used to accommodate for hospitalization that may or may not have been the result of anesthesia and/or sedation administered to the patient.
- The charts below show the numbers of hospitalizations during each fiscal period:



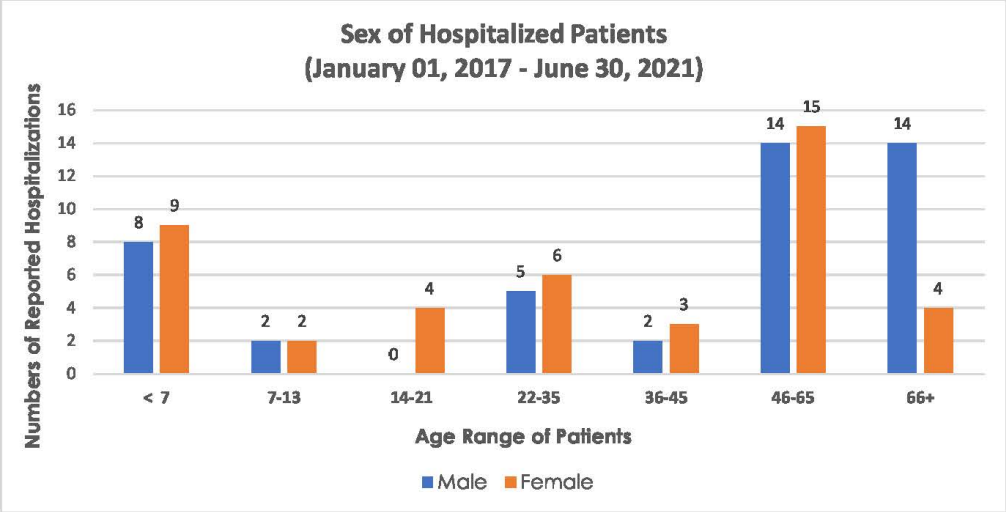

Hospitalization Incident Report
(July 01, 2017 - June 30, 2018)
Numbers of Reported Incidents
15
10
5
0
5
1
0
3
1
6
8
Under 7
7-12
13-21
22-22
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation

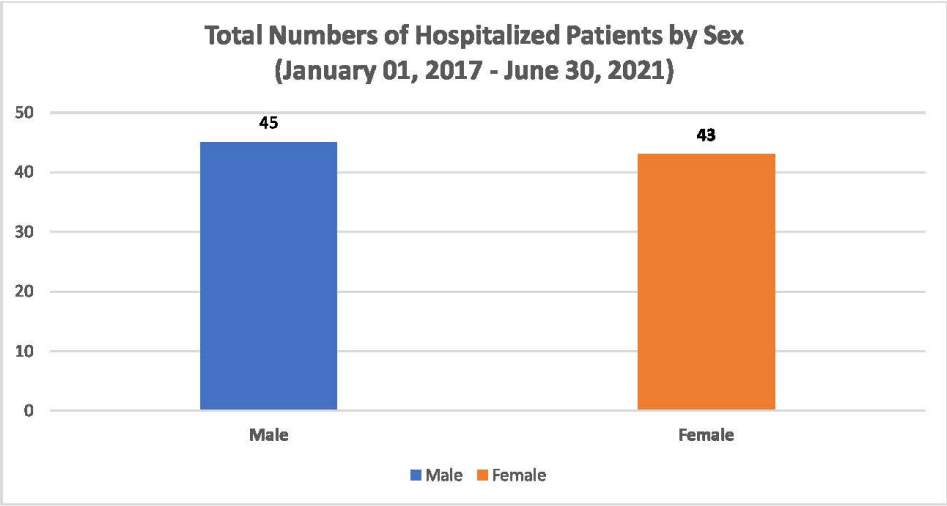

Hospitalization Incident Report
(July 01, 2018 - June 30, 2019)
Numbers of Reported Incidents
15
10
5
0
4
1
0
1
2
4
1
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation


Hospitalization Incident Report
(July 01, 2019 - June 30, 2020)
Numbers of Reported Incidents
10
5
0
4
0
2
1
1
7
4
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation


Hospitalization Incident Report
(July 01, 2020 - June 30, 2021)
Numbers of Reported Incidents
10
5
0
3
2
2
4
0
7
2
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation

Sex of Hospitalized Patients by Age Group



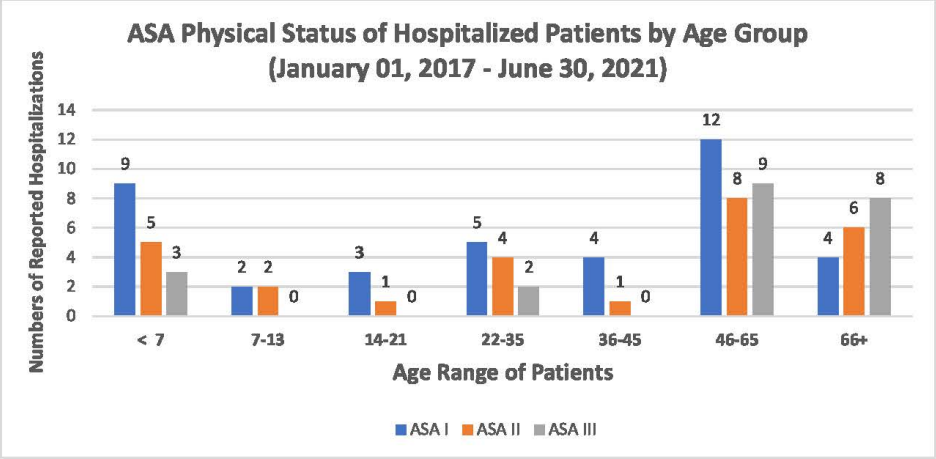


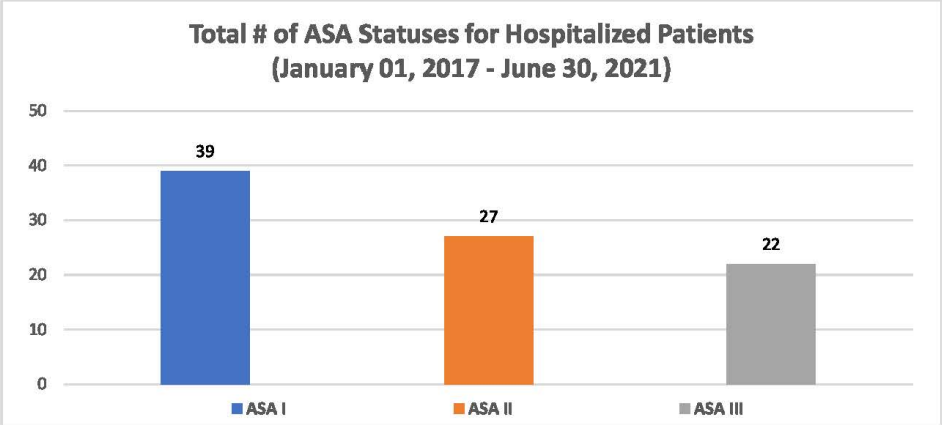
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of 17 hospitalization reports (8 were males, and 9 were females).
  - For older pediatric patients ages 7-12, there were a total of four hospitalization reports (2 were males and 2 were females).

- For adolescent patients ages 13-21, there were a total of four hospitalization reports (no males; all 4 were females).
- For young adult patients ages 22-35, there were a total of 11 hospitalization reports (5 were males, and 6 were females).
- For adult patients ages 36-45, there were a total of five hospitalization reports (2 were males, and 3 were females).
- For middle-aged patients ages 46-65, there were a total of 29 hospitalization reports (14 were males, and 15 were females).
- For senior patients ages 66 and up, there were a total of 17 hospitalization reports (8 were males, and 9 were females).

- According to the data collected, the ratio of males to females was overall similar in number, except for senior patients ages 66 and up. In this group, the number of males was 3.5 times more than that of females (14 to 4). Overall, there did not appear to be any significant discrepancy among the numbers to indicate that one sex is more prone than another when it comes to the number of those hospitalized due to possible anesthesia and or sedation related incidents.

ASA Physical Status of Hospitalized Patients by Age Group



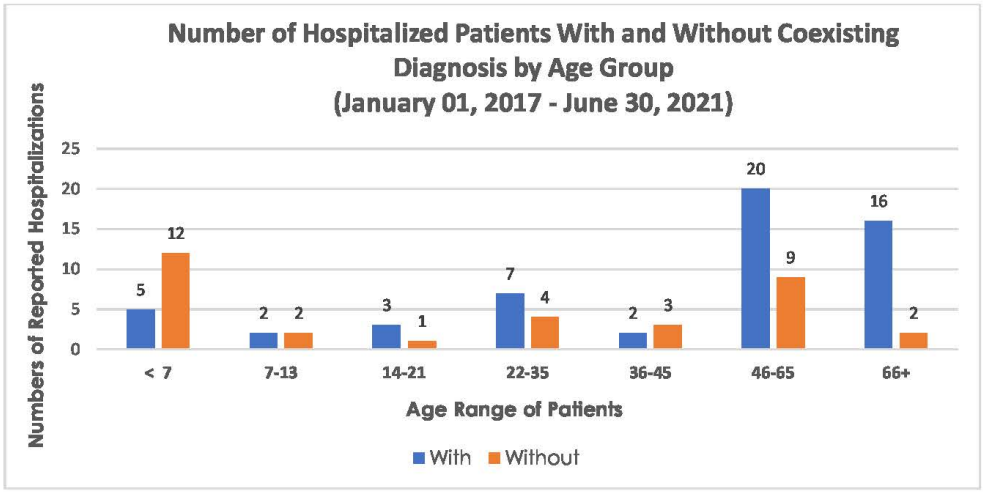


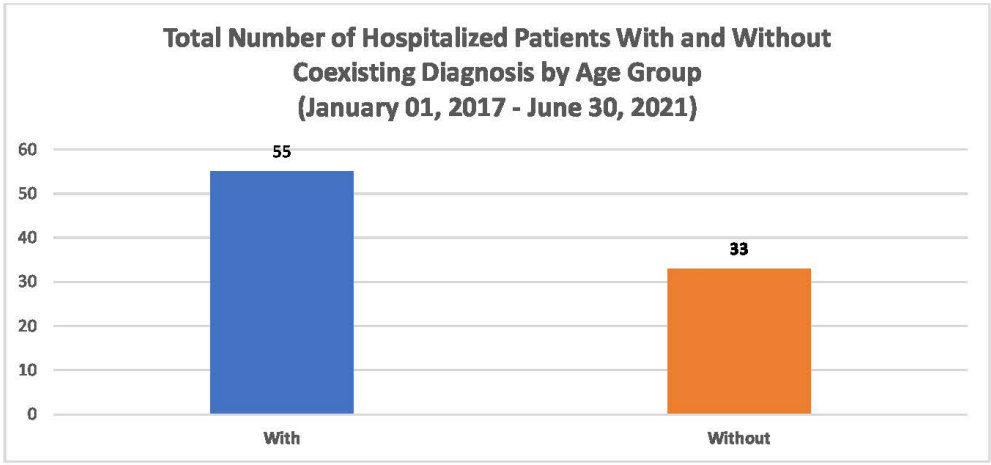
- According to the ASA, the ASA Physical Status Classification System has been in use for over 60 years. The purpose of the system is to assess and communicate a patient's pre-anesthesia medical co-morbidities. The classification does not predict the perioperative risks, but used with other factors (e.g., type of surgery, facility, level of deconditioning), it can be helpful in predicting perioperative risks.
- A general guidelines of the ASA Physical Status Classification System are outlined below:
  - ASA I: A normal healthy patient
  - ASA II: A patient with mild systemic disease
  - ASA III: A patient with severe systemic disease
  - ASA IV: A patient with severe systemic disease that is a constant threat to life (none reported)
  - ASA V: A moribund patient who is not expected to survive without the operation (none reported)
  - ASA VI: A declared brain-dead patient whose organs are being removed for donor purposes (none reported)
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age: nine patients were considered healthy, five as having mild systemic disease, and three with severe systemic disease.

- For older pediatric patients ages 7-12: two patients were considered healthy, two as having mild systemic disease, and none with severe systemic disease.
- For adolescent patients ages 13-21: three patients were considered healthy, one as having mild systemic disease, and none with severe systemic disease.
- For young adult patients ages 22-35: five patients were considered healthy, four as having mild systemic disease, and two with severe systemic disease.
- For adult patients ages 36-45: four patients were considered healthy, one as having mild systemic disease, and none with severe systemic disease.
- For middle-aged patients ages 46-65: 12 patients were considered healthy, eight as having mild systemic disease, and nine with severe systemic disease.
- For senior patients ages 66 and up: four patients were considered healthy, six as having mild systemic disease, and eight with severe systemic disease.

- According to the data collected, the total number of patients in every age group combined that were considered "normal healthy patient" were 39; 27 were considered as those with mild systemic disease, and 22 were considered as those with severe systemic disease. Most younger patients hospitalized were normal healthy patients, but beginning with the middle-aged group, there are higher numbers of ASA statuses of II and III. It is known that health declines as one gets older. Although the ASA guidelines go up to level VI, there were no reports of any hospitalized patients who were considered greater than level III.

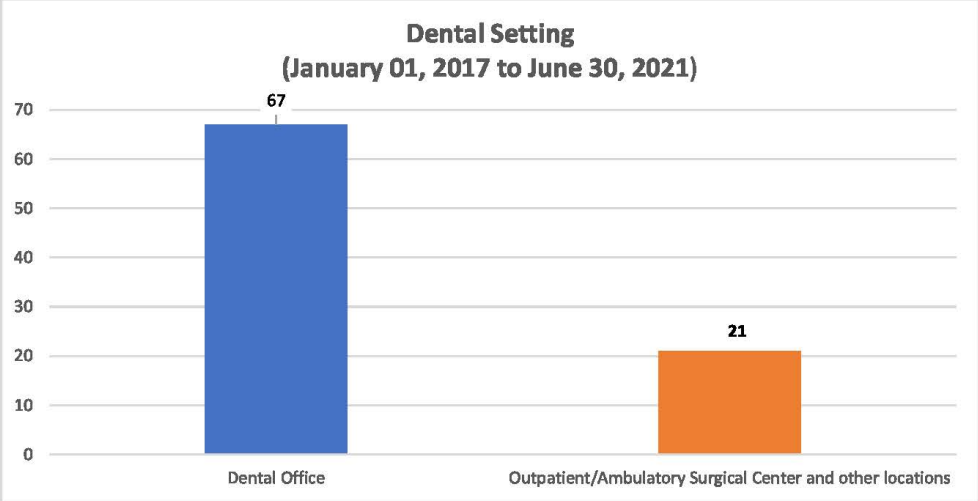
Number of Hospitalized Patients With and Without Coexisting Diagnosis by Age Group





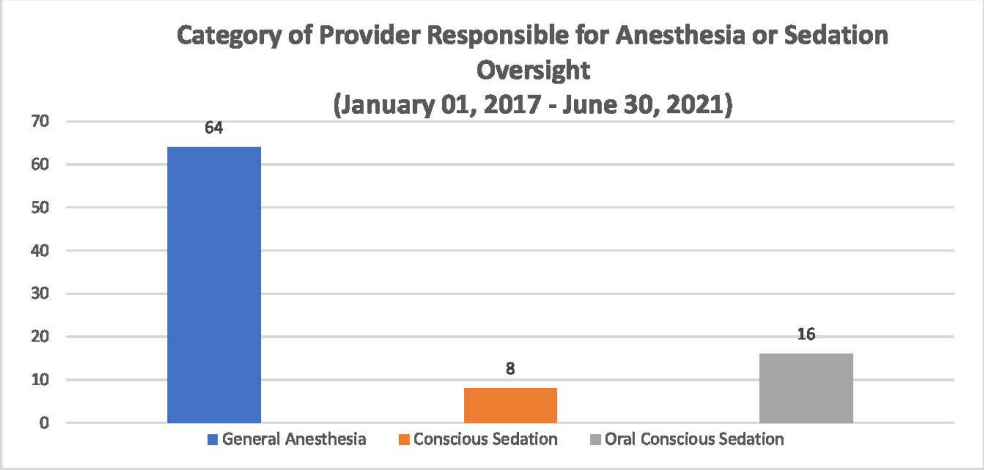
- These charts represent hospitalized patients who, before their dental procedure, either had or did not have coexisting diagnosis. A total of 55 hospitalized patients were found to have a coexisting diagnosis, while 33 did not. Predictably, there were higher numbers of serious coexisting diagnoses, such as hypertension, diabetes, liver disease, and other serious conditions, from age 46 and older. These numbers are for hospitalizations possibly due to the anesthesia and/or sedation administered, but the patients' coexisting diagnoses also could have played a role in their hospitalization, and this could hold truer for the older age groups.

Dental Setting of Those Who Were Hospitalized



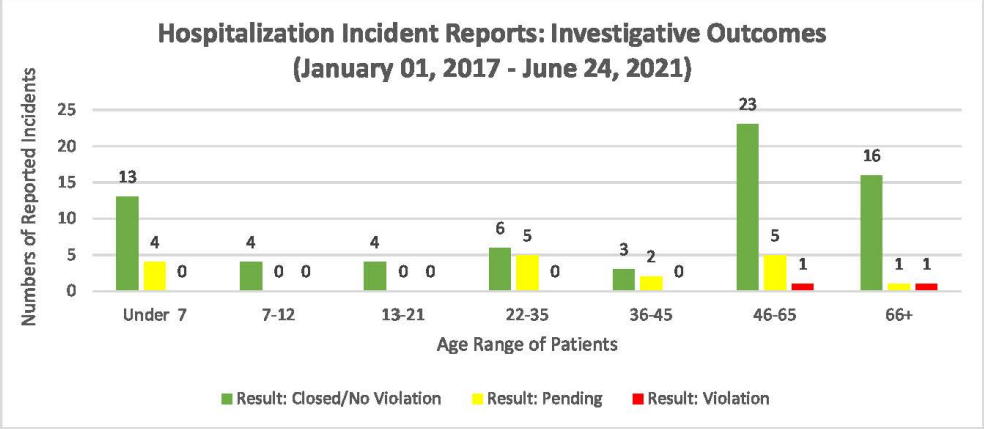
- This chart represents the setting of the dental procedures that resulted in hospitalization possibly due to the administration of anesthesia and/or sedation treatment. Out of the total 88 reports of dental treatment that resulted in hospitalization, 67 were conducted in a dental office; 21 were conducted in outpatient/ambulatory surgical centers and other locations that were not a dental office.

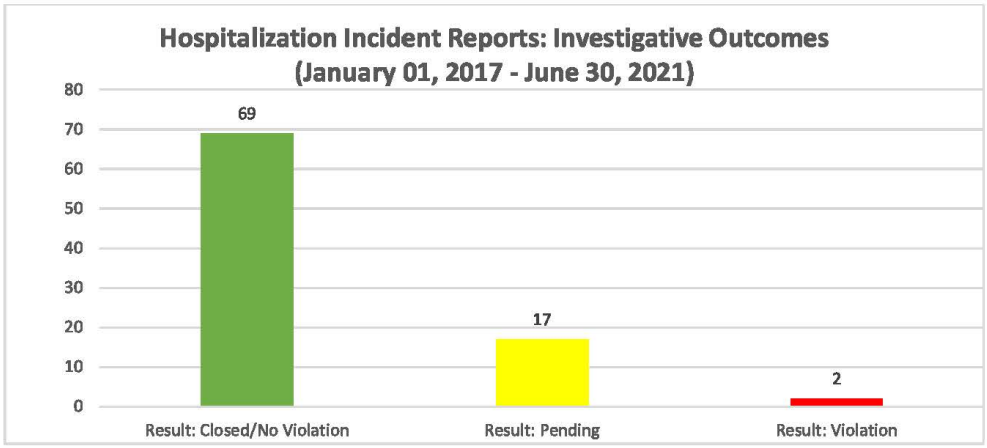
Category of Provider Responsible for Anesthesia or Sedation Oversight for Patients Who Were Hospitalized



- This chart represents the category (anesthesia or sedation certification) of the provider responsible for anesthesia or sedation oversight in cases where the patients were hospitalized possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 88 cases of reported hospitalizations, 64 of the care providers possessed a current general anesthesia permit.
  - Eight of the care providers possessed a current conscious sedation permit.
  - Sixteen of the care providers possessed a current oral conscious sedation permit.
- Note that the provider responsible for anesthesia or sedation oversight was also the same provider who delivered the anesthesia and/or sedation and monitored the patient during the procedure. In the case of monitoring, aside from the provider, there were cases where registered dental assistants also participated in the monitoring.

Hospitalization Incident Reports: Investigative Outcomes



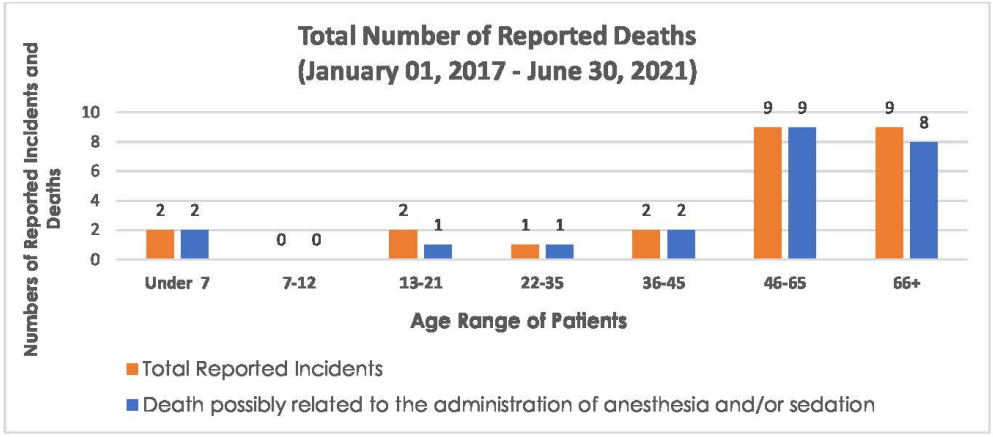


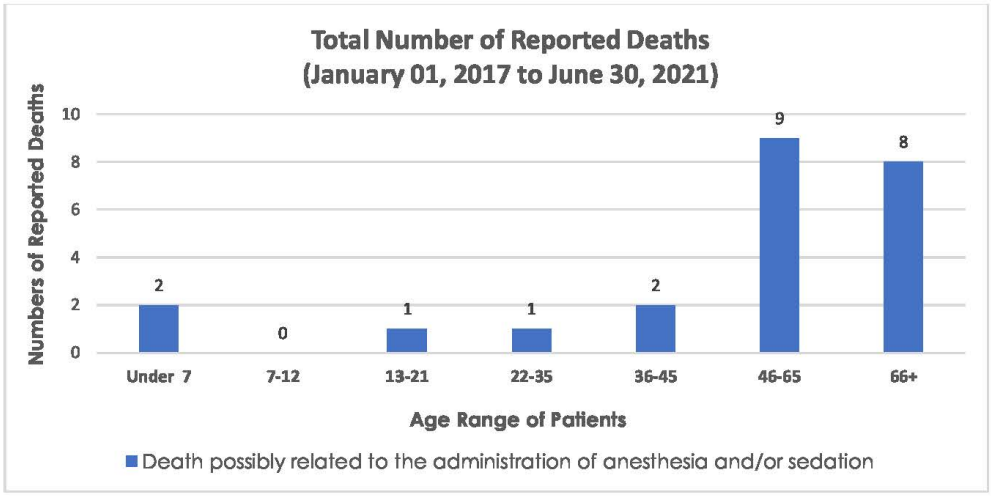
- These two charts represent the Board's investigative outcomes from January 1, 2017, to June 30, 2021, for all reported hospitalizations where anesthesia and/or sedation was given.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of 17 incident reports of hospitalization. Of those 17, 13 cases resulted in no violations, and four cases are currently pending.
  - For older pediatric patients ages 7-12, there were a total of four incident reports of hospitalization; all four cases resulted in no violations occurring.
  - For adolescent patients ages 13-21, there were a total of four incident reports of hospitalization; all four cases resulted in no violations occurring.
  - For young adult patients ages 22-35, there were a total of 11 incident reports of hospitalization. Of those 11, six cases resulted in no violations, and five cases are currently pending.
  - For adult patients ages 36-45, there were a total of five incident reports of hospitalization. Of those five, three cases resulted in no violations, and two cases are currently pending.
  - For middle-aged patients ages 46-65, there were a total of 29 incident reports of hospitalization. Of those 29, 23 cases resulted in no violations, one case resulted in a violation, and five cases are currently pending.

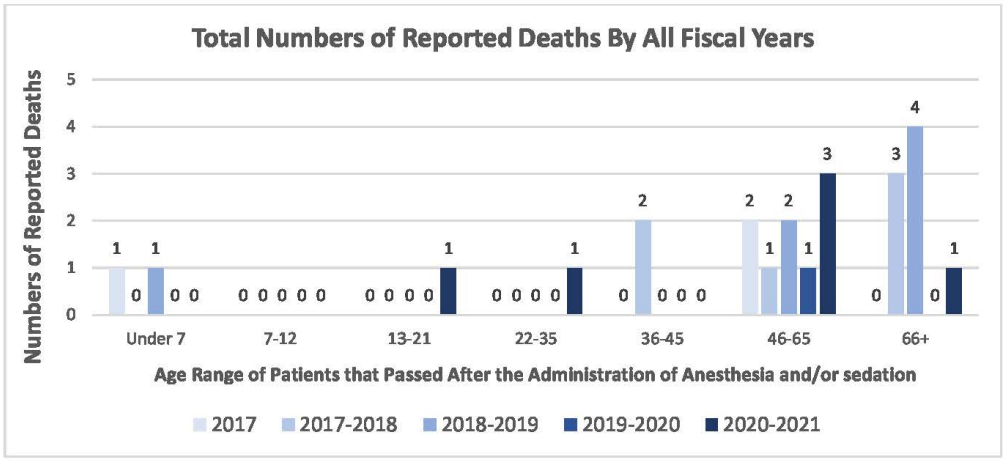
- For senior patients ages 66 and up, there were a total of 18 incident reports of hospitalization. Of those 18, 16 cases resulted in no violations, one case resulted in a violation, and one case is currently pending.

- Percentages of the case results are broken down as follows:
  - 78.4% of cases were "Closed – No Violations"
  - 19.3% of cases are in "Pending" status
  - 2.3% of cases were "Violations"

Death Incident Reports by Age Group



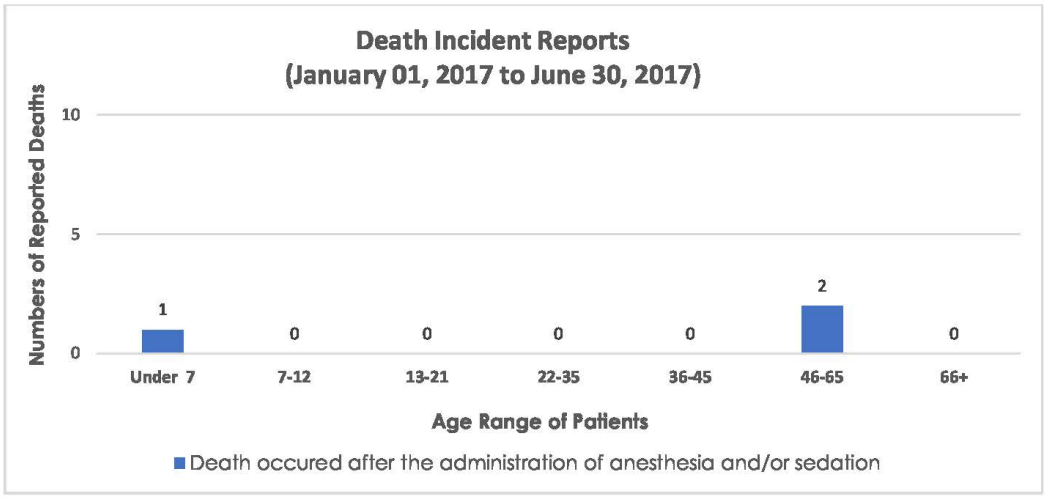


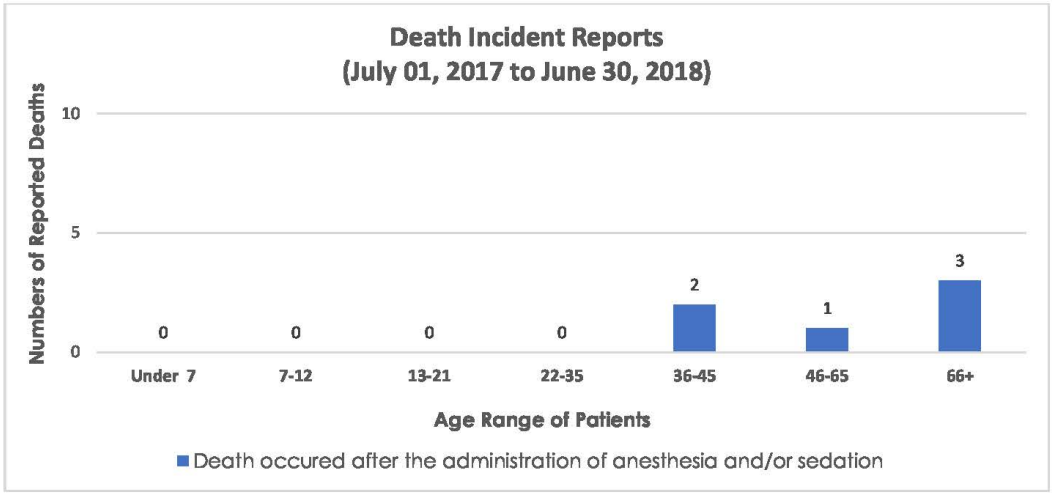


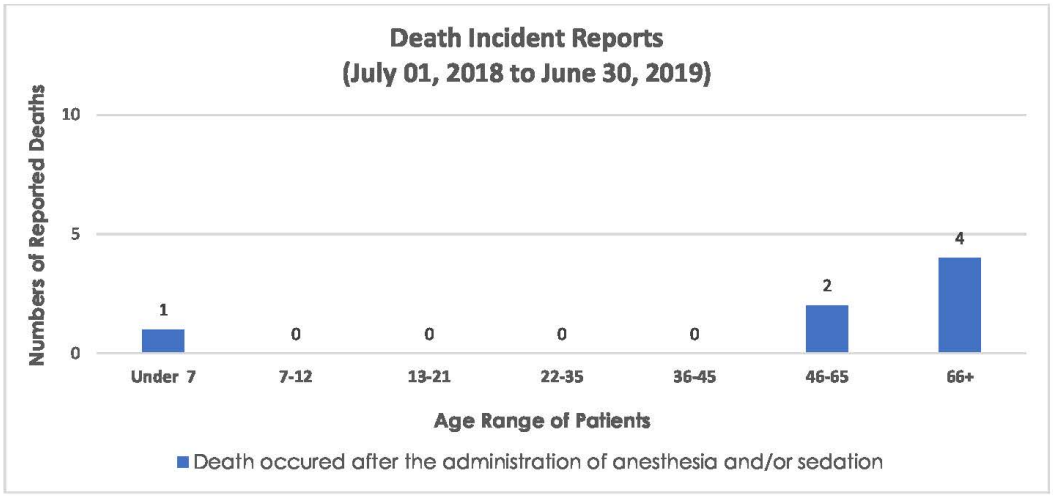
- The first chart reflects the total number of incident reports and how many resulted in deaths possibly related to the administration of anesthesia and/or sedation during dental treatments in a four and one half-year span. The second chart is a reiteration of the first chart, but represents only the total numbers of reported deaths for that same time frame. The third chart represents the numbers of reported deaths throughout the various fiscal years via their age groups. This chart is presented to provide a comparison of any possible trends throughout this period of review.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of two incident reports, and of those of 2, both resulted in death possibly due to anesthesia and/or sedation related treatment.
  - For older pediatric patients ages 7-12, there were no reported deaths.
  - For adolescent patients ages 13-21, there were a total of two incident reports, and of those two, one resulted in death possibly due to anesthesia and/or sedation related treatment.
  - For young adult patients ages 22-35, there was only one incident report, which was reported as a death that was possibly due to anesthesia and/or sedation related treatment.
  - For adult patients ages 36-45, there were a total of two incident reports, and of those two, both resulted in death possibly to due to anesthesia and/or sedation related treatment.

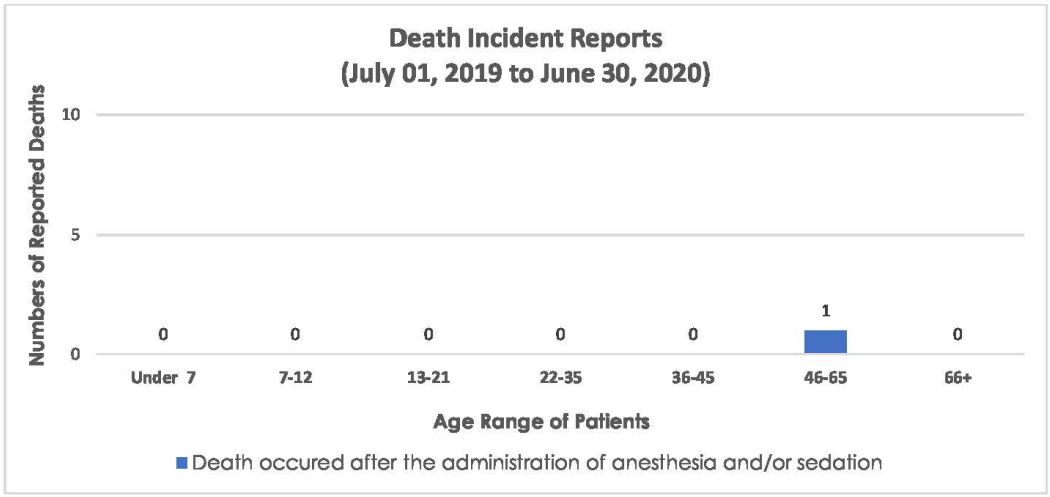
- For middle-aged patients ages 46-65, there were a total of nine incident reports, and all nine resulted in death possibly to due anesthesia and/or sedation related treatment.
- For senior patients ages 66 and up, there were a total of nine incident reports, and of those nine, eight resulted in death possibly to due anesthesia and/or sedation related treatment.

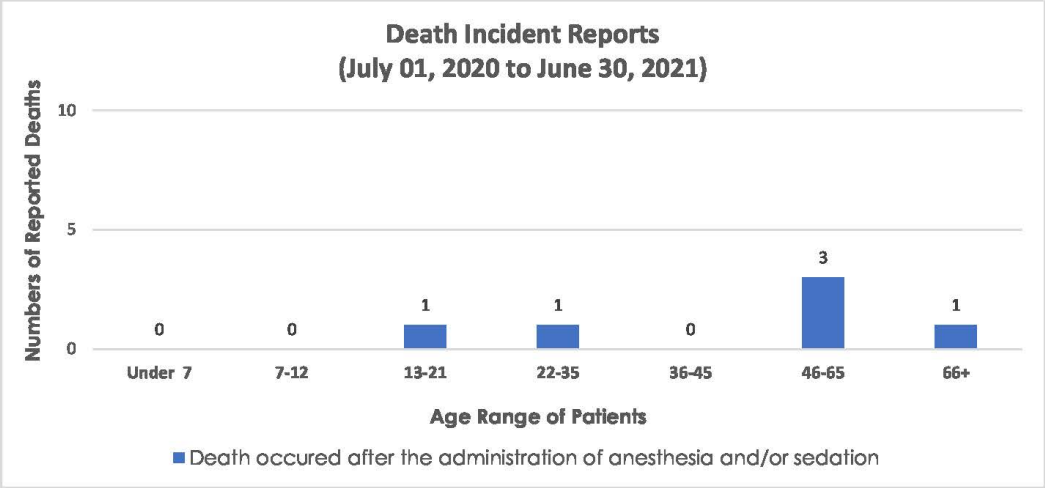
- Below is a breakdown of the numbers of deaths for each fiscal period:



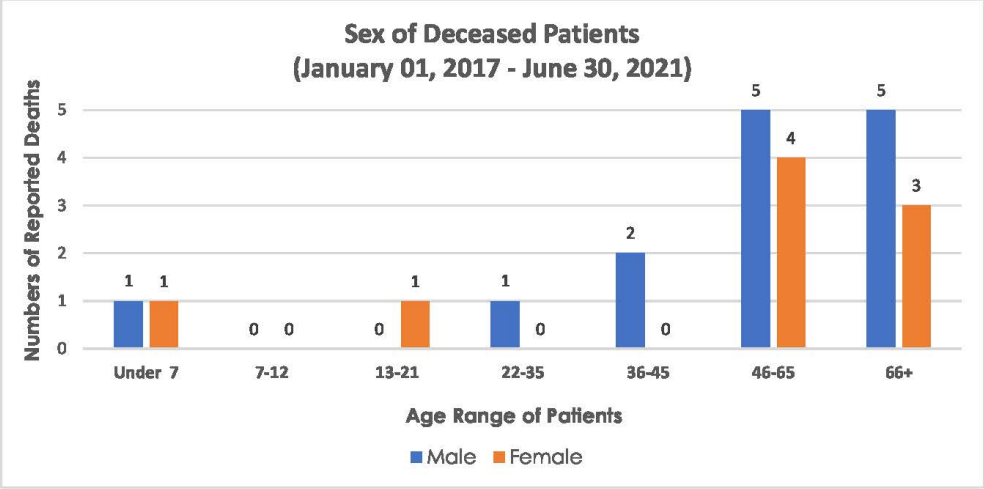



Death Incident Reports
(July 01, 2018 to June 30, 2019)
Numbers of Reported Deaths
10
5
0
1
0
0
0
0
2
4
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation


Death Incident Reports
(July 01, 2019 to June 30, 2020)
Numbers of Reported Deaths
10
5
0
0
0
0
0
0
1
0
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation

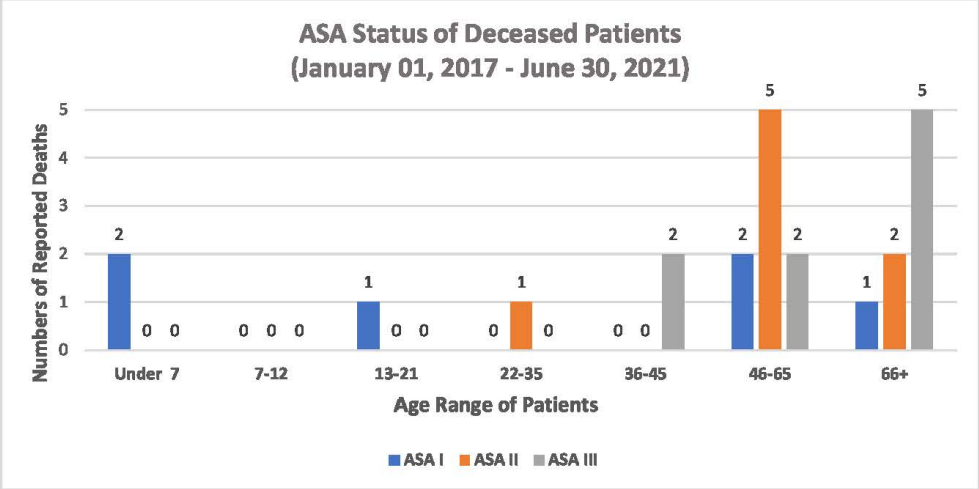

Death Incident Reports
(July 01, 2020 to June 30, 2021)
Numbers of Reported Deaths
10
5
0
0
0
1
1
0
3
1
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation

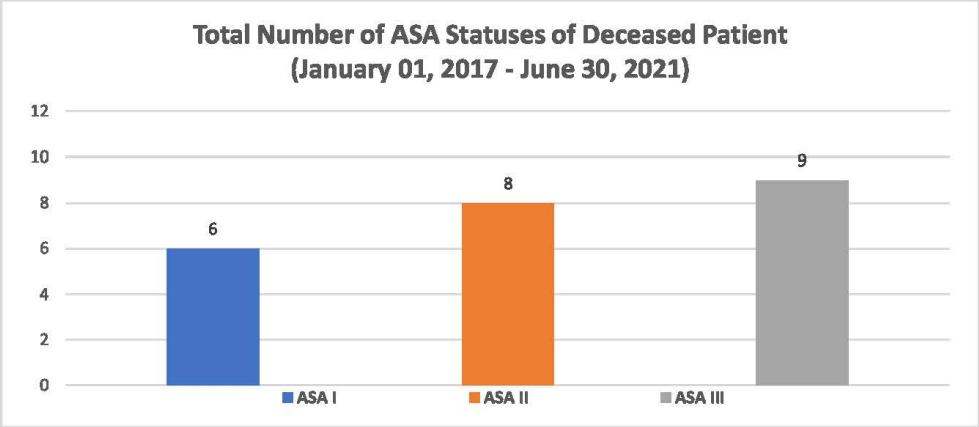
Sex of Deceased Patients by Age Group



- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of two death reports (1 male and 1 female).
  - For older pediatric patients ages 7-12, there were no reported deaths.
  - For adolescent patients ages 13-21, there was one death report (1 female).
  - For young adult patients ages 22-35, there was one hospitalization report (1 male).
  - For adult patients ages 36-45, there were a total of two death reports (2 males).
  - For middle-aged patients ages 46-65, there were a total of nine death reports (5 males and 4 females).
  - For senior patients ages 66 and up, there were a total of eight death reports (5 males and 3 females).
- The ratio of males to females was overall similar in number throughout the various age groups.

ASA Physical Status Classification (I, II, or III) of Deceased Patients by Age Group



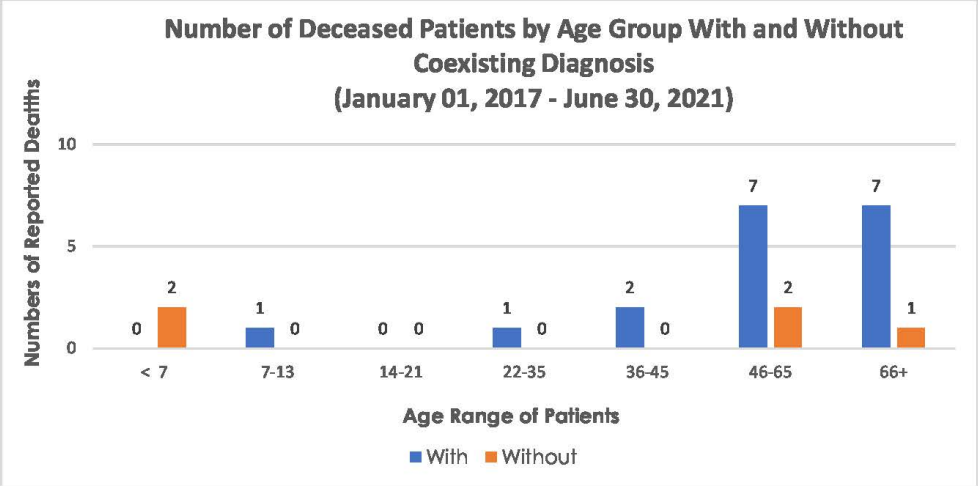


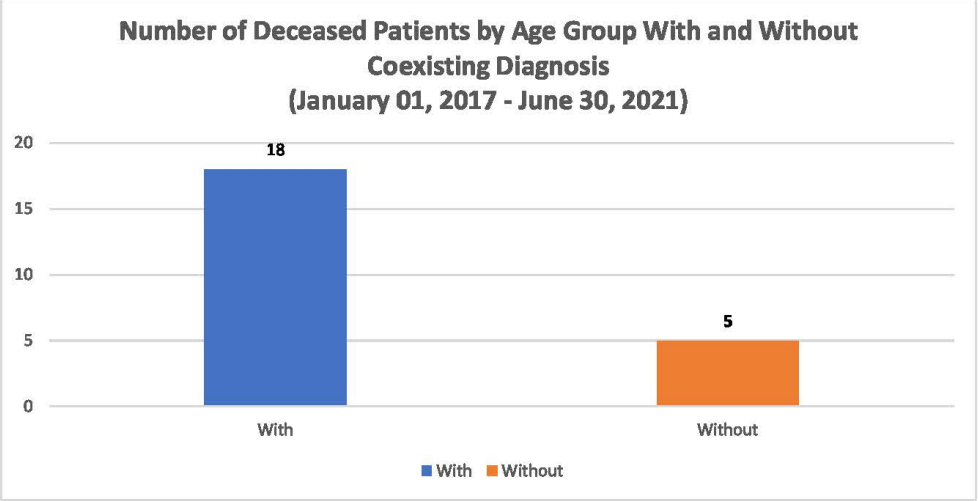
- The general guidelines of the ASA Physical Status Classification System are outlined below:
  - ASA I: A normal healthy patient
  - ASA II: A patient with mild systemic disease
  - ASA III: A patient with severe systemic disease
  - ASA IV: A patient with severe systemic disease that is a constant threat to life (none reported)

- ASA V: A moribund patient who is not expected to survive without the operation (none reported)
- ASA VI: A declared brain-dead patient whose organs are being removed for donor purposes (none reported)

- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age: both patients were considered healthy.
  - For older pediatric patients ages 7-12: there no reports of death.
  - For adolescent patients ages 13-21: one patient was considered healthy.
  - For young adult patients ages 22-35: one patient was considered as having mild systemic disease.
  - For adult patients ages 36-45: two patients were considered as having severe systemic disease.
  - For middle-aged patients ages 46-65: two patients were considered healthy, five as having mild systemic disease, and two with severe systemic disease.
  - For senior patients ages 66 and up: one patient was considered healthy, two as having mild systemic disease, and five with severe systemic disease.
- In every age group combined, there were six patients considered "normal healthy patient," eight were considered as those with mild systemic disease, and nine were considered as those with severe systemic disease. Both of the patients from the younger age group were considered healthy, but in the adult patients age group, there were higher numbers of ASA status of II and III similar to the hospitalization statistics. Although the ASA guidelines go up to level VI, there were no reports of any hospitalized patients who were considered a level IV, V, or VI.

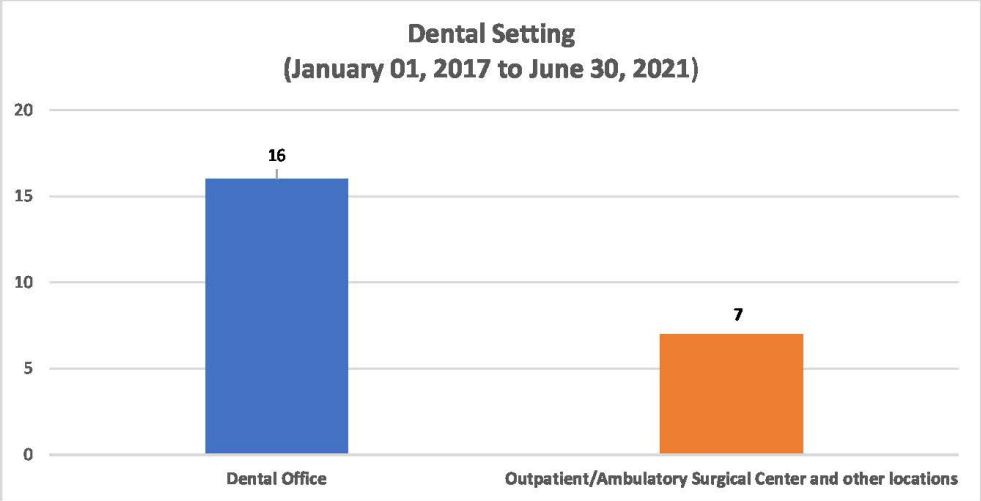
Number of Deceased Patients by Age Group With and Without Coexisting Diagnosis





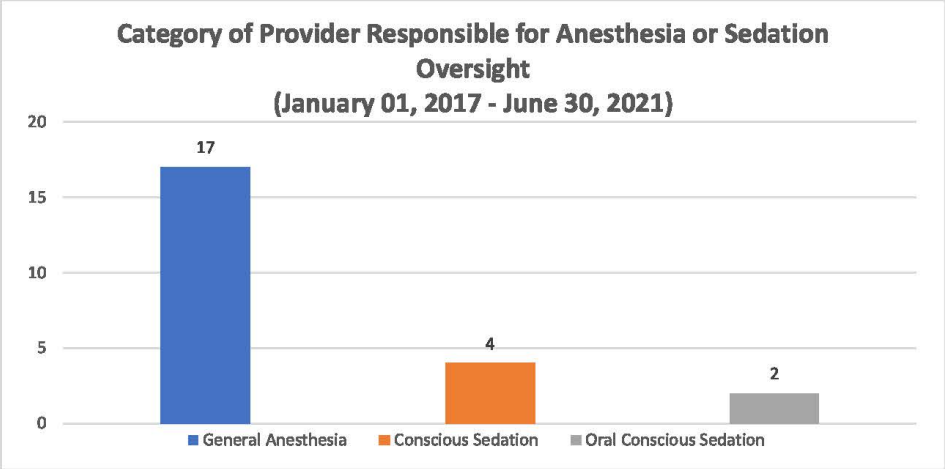
- These charts represent deceased patients who, before their dental procedure, either had or did not have coexisting diagnosis. A total of 18 deceased patients were found to have a coexisting diagnosis; only five did not. Predictably, there were higher numbers of serious coexisting diagnoses, such as hypertension, diabetes, liver disease, and other serious conditions, beginning at age 46 and older.

Dental Setting Where Anesthesia and/or Sedation May Have Resulted in Patient's Death



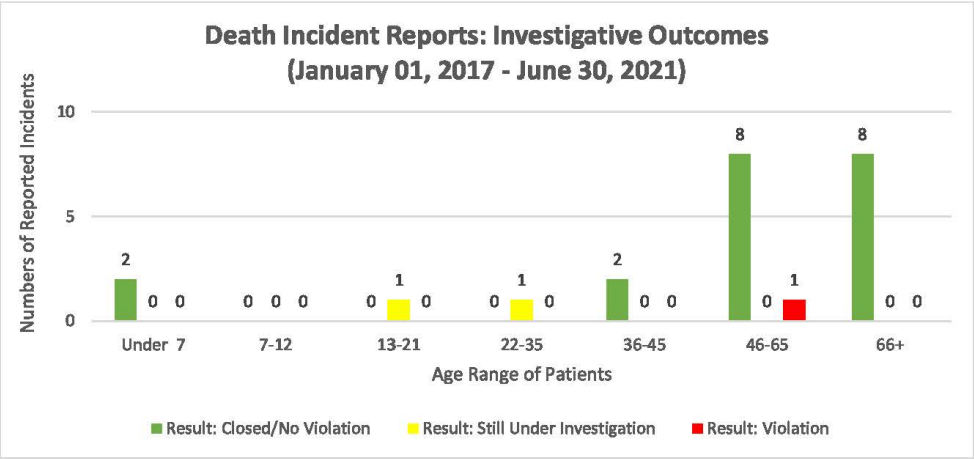
- This chart represents the setting of the dental procedures that resulted in the death of patients possibly due to the administration of anesthesia and/or sedation. Out of the total 23 dental treatments that possibly resulted in death, 16 were conducted in a dental office, while seven were conducted in outpatient/ambulatory surgical centers and other locations that were not a dental office.

Category of Provider Responsible for Anesthesia or Sedation Oversight of Deceased Patient



- This chart represents the permit category (anesthesia or sedation) of the provider responsible for anesthesia or sedation oversight in cases where the patient had passed away possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 23 cases of reported deaths, 17 of the care providers possessed a current general anesthesia permit at the time of the procedure.
  - Four of the care providers possessed a current conscious sedation permit
  - Two of the care providers possessed a current oral conscious sedation permit
- The provider responsible for anesthesia or sedation oversight was also the same provider who delivered the anesthesia and/or sedation and monitored the patient during the procedure. In the case of monitoring, aside from the provider, there were cases where registered dental assistants also participated in the monitoring.

Death Incident Reports: Investigative Outcomes



- This chart represents the Board's investigative outcomes from January 1, 2017, to June 30, 2021, for all reported deaths where anesthesia and/or sedation was administered.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of two incident reports of death, and both of those cases resulted in no violations.
  - For older pediatric patients ages 7-12, there were no reported cases of death.
  - For adolescent patients ages 13-21, there was one incident report of death, which is pending further investigation.
  - For young adult patients ages 22-35, there was one incident report of death, which is pending further investigation.
  - For adult patients ages 36-45, there were a total of two incident reports of death, and both of those cases resulted in no violations.
  - For middle-aged patients ages 46-65, there were a total of nine incident reports of death. Of those nine, eight cases resulted in no violations, and only one case resulted in violation.
  - For senior patients ages 66 and up, there were a total of eight incident reports of death, none of which resulted in violations.

- Percentages of the case results are broken down as follows:
  - 86.96% of cases were "Closed – No Violations"
  - 8.69% of cases are in "Pending" status
  - 4.35% of cases were "Violations"

RELEVANT PROFESSIONAL GUIDELINES, RECOMMENDATIONS, OR BEST PRACTICES FOR THE PROVISION OF DENTAL ANESTHESIA AND SEDATION CARE

To prepare its findings relevant to inform dental anesthesia and sedation standards, the Board reviewed the following professional organization guidelines, with pertinent highlights and excerpts.

- **American Dental Association (ADA) "Guidelines for Use of Sedation and General Anesthesia by Dentists" (2016)**
  - These guidelines defer to the American Academy of Pediatrics (AAP) and American Academy of Pediatric Dentistry (AAPD) guidelines relative to children.
  - Sedation and anesthesia are categorized as minimal sedation, moderate sedation, deep sedation, and general anesthesia with attendant definitions and physiologic parameters.
  - Concerns are raised about the continuum of anesthesia levels and that providers need to be able to identify and rescue patients who have gone to a level deeper than initially intended.
  - For minimal sedation, all providers and their staff need to be certified in Basic Life Support (BLS). A focused physical examination, including vital signs, must be performed on patients before this level of sedation. Positive pressure oxygen must be available and pulse oximetry should be considered for some patients.
  - For moderate sedation, providers must complete a training program consistent with the ADA guidelines for training programs or a Commission on Dental Accreditation (CODA) approved residency with appropriate training. Patients must be appropriately evaluated with the necessity of physician consultation when appropriate. Positive pressure oxygen must be available and end tidal carbon dioxide and auscultation of breath sounds must be available as well. Pulse oximetry, heart

rate, respiratory rate, blood pressure, and level of consciousness must be continually monitored.

- For deep sedation and general anesthesia, certification and BLS and Advanced Cardiac Life Support (ACLS) is indicated, and only providers who have completed a CODA-approved training program that includes deep sedation and general anesthesia as part of the curriculum may administer those levels of anesthesia. Patients must be physically assessed prior to anesthesia, including Body-Mass Index (BMI). Three individuals must be present in the operatory at the time of anesthesia, including two in addition to the operator who are BLS certified, one of whom needs to be designated to monitor the patient only during the procedure if the operator is doing the anesthetic as well. End tidal carbon dioxide and a precordial stethoscope are not mandated but must be immediately available.

- **AAP "Guidelines for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures" (2019)**

  - These guidelines are a collaborative effort of the AAP and AAPD for the monitoring and management of pediatric patients undergoing sedation.
  - Appropriate physiologic monitoring by personnel not involved in the procedure allow for accurate and rapid diagnosis of complications.
  - Children younger than six years pose the greatest risk for adverse problems.
  - It is common for children to pass from levels of sedation to deeper unintended levels.
  - The patient chart shall contain a time-based record that includes the name, route, site, time, dosage, and patient effect of administered drugs.
  - Level of consciousness and responsiveness, heart rate, blood pressure, respiratory rate, end tidal carbon dioxide, and oxygen saturation must be documented in the chart.

- For moderate sedation, the practitioner must have Pediatric Advanced Life Support (PALS) certification, and a support person must be designated to monitor the physiologic parameters of the patient under sedation or anesthesia. This individual must have PALS certification. Monitoring includes oxygen saturation and heart rate. When communication is possible, capnography or precordial stethoscope is recommended. When communication is not possible, capnography (is required and preferred) or a precordial stethoscope is required.
- For deep sedation and general anesthesia, two individuals must be present throughout the procedure. Each of them must have appropriate training and PALS certification. One of these two needs to be an independent member of the team to administer drugs and observe the patient. The guidelines suggest this individual must be a physician anesthesiologist, certified registered nurse anesthetist, oral and maxillofacial surgeon, or dentist anesthesiologist.

- **American Society of Anesthesiology – "Standards for Basic Anesthetic Monitoring" (2015)**
  - Standards apply to all anesthesia care, including general anesthesia and monitored anesthesia care (moderate sedation).
  - Oxygenation (pulse oximetry), ventilation (patient observation, breath sounds, and end tidal carbon dioxide monitoring), circulation (EKG with every five-minute evaluation of blood pressure and heart rate), and temperature shall be continually evaluated during all anesthetics.
  - Temperature should be monitored when clinically indicated.

- **ADA "Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students" (2016)**
  - Emphasizes that level of sedation and anesthesia is not dependent on the route of administration. Training must be consistent with protecting the patient.
  - Supports the AAP/AAPD guidelines for pediatric sedation and anesthesia.

- Deep sedation and general anesthesia must be taught in CODA-accredited postgraduate programs.
- Offers definitions for minimal sedation, moderate sedation, deep sedation, and general anesthesia.
- Supports the ASA classification of patients for anesthesia.
- Reiterates ASA fasting guidelines.
- Provides a suggested curriculum content for teaching minimal and moderate sedation at the pre-doctoral level.

o **ADA "Guidelines for Teaching Pediatric Pain Control and Sedation to Dentists and Dental Students" (2021)**

- The guidelines are very similar to the ADA guidelines for teaching pain control and sedation dentist and dental students with emphasis on the fact that pediatric patients are particularly difficult to deal with in the dental office.
- Provides direction for teaching minimal and moderate sedation to dentist and dental students for office care of pediatric patients.
- Reinforces support of the AAP/AAPD guidelines for pediatric anesthesia.
- Identifies pediatric patients as under 10 to 13 years of age with emphasis on increased risk with patients under six.
- Suggest a pre-doctoral curriculum should include education in pharmacological and nonpharmacological methods of managing pediatric patients.
- Stresses the need to understand maximal doses of local anesthesia for children.
- Recognizes that training for moderate sedation is not within the normal scope of a pre-doctoral educational program.
- Stresses the continuum of levels of anesthesia and potential need for rescue during the administration of any anesthetic.
- Reiterates the definitions for levels of anesthesia and routes of administration.
- Offers curriculum guidelines for teaching pain control for

pediatric patients at the pre-doctoral level.

- Offers curriculum guidelines for an extended course of education in moderate sedation with a specific number of hours and clinical cases to determine competency including the number of patients who must be under six years of age.

- **Practice Guidelines for Moderate Procedural Sedation and Analgesia (2018)**
  - Prepared by a task force of six organizations, including the American Association of Oral and Maxillofacial Surgeons (AAOMS), ADA, and American Society of Dentist Anesthesiologists (ASDA).
  - Specific for moderate sedation and does not provide suggestions as to the educational requirements to be able to administer moderate sedation.
  - Each of the participating organizations sent representatives to serve as members of the task force.
  - Emphasizes the need for potential rescue of patients from deeper levels of anesthesia.
  - Used published research analysis to validate the guidelines.
  - Stresses the importance of pre-procedural patient evaluation for adequate history and physical findings.
  - Charting includes level of consciousness, ventilation by clinical signs capnography and pulse and oximetry, hemodynamic monitoring by blood pressure, heart rate and EKG, and availability of an individual responsible for patient monitoring.
  - Supports use of capnography, pulse oximetry, and EKG for monitoring based on literature review.
  - Literature is insufficient to determine whether or not an individual dedicated to patient monitoring will reduce adverse outcomes.
  - Survey of panel members differed somewhat from literature findings. Task force opinion survey served as a basis for practice parameters.
  - Recommends:

- Periodic monitoring of patient response to verbal commands.
- Using capnography for all patients under moderate sedation unless precluded.
- Pulse oximetry for all patients.
- Continuous monitoring of blood pressure and heart rate.
- EKG monitoring in patients with clinically significant cardiovascular disease.
- Record level of consciousness filtering oxygenation status and hemodynamic variables on record.
- Designating an individual with appropriate training other than the practitioner to monitor the patient throughout but not be part of the procedural team.

- Benzodiazepines and opioids are acceptable pharmacologic methods of providing moderate sedation.
- Propofol, ketamine, and etomidate are considered general anesthetic agents and not part of moderate sedation.

- **ASA "Guidelines for Office-Based Anesthesia (2019)**
  - Written by and for medical anesthesiologists who plan to perform ambulatory anesthesia in outpatient offices.
  - Places the responsibility on their members to investigate the areas where they are going to be practicing.
  - Significant infrastructure or comments, such as having a medical director or written policies and procedures, included in the document.
  - Suggest that all operating room personnel are qualified to do what they are doing.
  - Discharge of patients is the responsibility of the physician.
  - Personnel with advanced resuscitative technique training, such as ACLS and PALS, should be available until all patients are discharged.

- Generic statement that if children are being treated, all equipment, medication, and resuscitative capacities should be appropriately sized.
- Nothing specific relative to dental offices.

- **ASDA: Parameters of Care (2018)**
  - Written specifically for dentist anesthesiologists.
  - Reinforces the concept of a continuum of anesthetic levels and supports the ASA definitions of levels of anesthesia.
  - Anesthesiologist must maintain ACLS certification for all patients and PALS certification for patients under 13.
  - For deep sedation or general anesthesia, three individuals must be present: operating dentist; dentist anesthesiologist; and a trained dental assistant.
  - If the dentist anesthesiologist is the operator, then a second licensed anesthesia provider should be present for deep sedation and general anesthesia.
  - For moderate sedation, the dentist anesthesiologist can be the operator but needs one appropriately trained support staff to help monitor the patient.
  - Agrees with ASA preoperative fasting guidelines.
  - Monitoring includes pulse oximetry, end tidal carbon dioxide, observation of chest excursions, EKG, and arterial blood pressure.
  - If triggering agents for malignant hyperthermia are used, monitoring of body temperature should be done, and agents to correct the emergency must be present.
  - A licensed general anesthesia provider is responsible for determining and documenting the criteria for discharge have been met.

COMPARATIVE REVIEW

Since the Board submitted its Pediatric Anesthesia Study in December 2016, there have been several statutory changes due to the enactment of SB 501. This report provides

comment on contemporary California law in comparison to the above-referenced guidelines from other organizations where they are relevant.

The review of the guidelines did not produce significant differences in most of the publications as they were unchanged from prior to 2016. Several of the guidelines did put additional emphasis concerning pediatric anesthesia and are contrasted below with the minimal, moderate, and deep sedation and general anesthesia statutes enacted in SB 501 that become effective on January 1, 2022.

Monitoring Equipment

Most of the above guidelines reference the use of specific patient monitoring equipment or recommend specific monitoring information to be charted for the patient. Once the new statutes in SB 501 go into effect on January 1, 2022, California law will be more prescriptive in the monitoring equipment required to be used for both adults and children undergoing deep sedation or general anesthesia. SB 501 expanded an existing ground for discipline for unprofessional conduct and will require any dentist with patients undergoing deep sedation, general anesthesia, or moderate sedation to have the 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; and (3) verbal communication with a patient under moderate sedation (not applicable for a patient under deep sedation or general anesthesia). In addition, for patients under 13 years of age undergoing deep sedation or general anesthesia, SB 501 will require the additional dental personnel monitoring the patient to be trained to read and respond to monitoring equipment including, but not limited to, pulse oximeter, cardiac monitor, blood pressure, pulse, capnograph, and respiration monitoring devices.

Personnel

Although the above guidelines vary with respect to the number of individuals (two or three) required to attend each patient under deep sedation, general anesthesia, or moderate sedation, California law will require three members for the operating/anesthesia team for children under the age of 13 undergoing moderate sedation, deep sedation, or general anesthesia. The operating dentist and one assistant must be PALS certified, with the PALS-certified assistant solely dedicated to monitoring the patient and trained to read and respond to monitoring equipment. For operating dentists who administer moderate sedation to children under 13, a pediatric endorsement will be required. For administration of deep sedation and general anesthesia to children under seven, the dentist must possess a pediatric endorsement.

Education

The above guidelines generally recommend ACLS certification of operators treating all patients and PALS certification of operators treating patients under 13 years of age. The SB 501 education requirements for operating dentists are consistent with prior legislation in that a dentist who wishes to administer deep sedation or general anesthesia must have graduated either from a CODA-approved program in dental anesthesia or oral and maxillofacial surgery. Those who wish to administer moderate sedation to children under the age of 13 must complete a program that teaches moderate sedation with statutory requirements as to the number of hours and cases and obtain a pediatric endorsement, which further requires ACLS and PALS certification. Dental assistants who are involved in deep sedation, general anesthesia, or moderate sedation cases must undergo additional education, including PALS or other board-approved training in pediatric life support and airway management.

California law is more prescriptive than the above-referenced guidelines from the various organizations that are concerned about anesthesia and sedation administered in dental offices. California law provides a robust and articulated series of requirements to provide the best environment with potentially higher safety standards for in-office anesthesia and sedation in general and specifically for pediatric patients.

CONCLUSION

This report concludes that with the implementation of new minimal, moderate, and deep sedation and general anesthesia provisions enacted by SB 501 that become effective on January 1, 2022, California will have some of the highest patient monitoring standards for the administration of minimal, moderate, and deep sedation and general anesthesia to dental patients of all age groups and especially for children. California statutes meet and generally exceed the guidelines of all the organizations that are involved in the administration of anesthesia to children in dental offices.

DENTAL BOARD OF CALIFORNIA

SUPPLEMENTAL REPORT TO CALIFORNIA STATE LEGISLATURE REGARDING FINDINGS RELEVANT TO INFORM DENTAL ANESTHESIA AND SEDATION STANDARDS

May 2022

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EXECUTIVE SUMMARY

The Dental Board of California (Board) submitted the Report to California State Legislature Regarding Findings Relevant to Inform Dental Anesthesia and Sedation Standards (Report) as required by Senate Bill (SB) 501 (Glazer, Chapter 929, Statutes of 2018) and Business and Professions Code (BPC) section 1601.4, subdivision (a)(2) on December 22, 2021.

The first half of the Report summarized the Board's statistical findings regarding adverse events reported to the Board after the administration of anesthesia and/or sedation before or during dental procedures. The adverse events reported to the Board were submitted by dental licensees, physicians and surgeons, anesthesiologists, and other various reporting sources from the period of January 1, 2017, to June 30, 2021.

The second half of the Report discussed relevant professional guidelines, recommendations, or best practices for the provision of dental anesthesia and sedation care and how they compare to California laws and regulations effective January 1, 2022.

The Report concluded that with the implementation of new minimal, moderate, and deep sedation and general anesthesia provisions enacted by SB 501 that became effective on January 1, 2022, California will have some of the highest patient monitoring standards for the administration of minimal, moderate, and deep sedation and general anesthesia to dental patients of all age groups and especially for children. California statutes continue to meet and generally exceed the guidelines of all the organizations that are involved in the administration of anesthesia to children in dental offices.

This Supplemental Report provides additional information and corrects information previously reported in the Report. The Board continues to collect information on adverse effects of anesthesia and sedation levels in dentistry, and the next Board report regarding pediatric deaths related to general anesthesia and deep sedation in dentistry will be submitted to the California State Legislature at the time of the Board's Sunset Review pursuant to the requirements of BPC section 1601.4, subdivision (b).

INTRODUCTION

In 2018, SB 501 (Glazer, Chapter 929, Statutes of 2018) amended BPC section 1601.4, subdivision (a), to require the Board to review available data on all adverse events related to general anesthesia and deep sedation, moderate sedation, and minimal sedation in dentistry and relevant professional guidelines, recommendations, or best practices for the provision of dental anesthesia and sedation care. SB 501, among other things, also required the Board, by January 1, 2022, to report to the California State Legislature any findings relevant to inform dental anesthesia and sedation standards.

The Board receives reports on adverse events related to general anesthesia and sedation in accordance with BPC section 1680, subdivision (z), which requires licensees to report the death of a patient during the performance of any dental or dental hygiene procedure, the discovery of a death of a patient whose death is related to dental or dental hygiene procedure performed by the licensee, or, 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. In addition, BPC section 1680, subdivision (z), requires the licensee to report a death or hospitalization when sedation and/or anesthesia is used for a dental procedure on a form approved by the Board and include all of the following information:

- 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.

As required by Assembly Bill (AB) 2235 (Thurmond, Chapter 519, Statutes of 2016), the Board created a "Courtesy Form for Reporting of Anesthesia Death or Hospitalization" (Courtesy Form) and posted the Courtesy Form on the Board's website.

To fulfill the report requirement mandated by SB 501, the Board reviewed the death or hospitalization incident reports and prepared a draft Report for submission to the California State Legislature. The draft Report was provided to the public for discussion at the Board's November 18-19, 2021 meeting. On November 17, 2021, the Board received a letter from the American Association of Oral and Maxillofacial Surgeons (AAOMS) expressing concerns that the draft Report had omitted provider specificity data, intended patient sedation level data, and AAOMS anesthesia guidelines. During the November 18-29, 2021 Board meeting, it was determined that due to the last-minute nature of the concerns raised by AAOMS, Board staff would review the concerns and potentially submit a Supplemental Report to the Legislature.

At the February 11-12, 2022 Board meeting, the Board discussed whether to include the AAOMS Parameters of Care and the AAOMS Office Anesthesia Evaluation guidelines in a Supplemental Report. After careful discussion, the Board voted not to include the AAOMS Parameters of Care and the AAOMS Office Anesthesia Evaluation guidelines in the Supplemental Report as the inclusion of the guidelines in the Report would not alter the information or produce a significant difference to the information already submitted.

To address AAOMS's request for provider specificity data and intended level of sedation, Board staff performed a comprehensive review of the death and hospitalization incident reports submitted to the Board to compile data on provider type for potential inclusion in a Supplemental Report. At the February 10-11, 2022 Board meeting, Board staff advised the Board that due to significant staffing issues due to the emergence of the COVID-19 Omicron variant, the comprehensive review had been delayed. Board staff anticipated completing the comprehensive review and potentially submitting a Supplemental Report for the Board's review and discussion at its May 12-13, 2022 meeting.

While reviewing the incident reports submitted to the Board, Board staff found the incident reports contained incomplete information on provider categories, which are specified in Business and Professions Code section 1680, subdivision (z)(3). It appeared the individuals who completed and submitted the incident reports may not have understood the provider categories. To clarify the provider types for individuals submitting the death and hospitalization incident reports, Board staff updated the Courtesy Form and posted it to the Board website on January 19, 2022.

The original Report submitted to the Legislature on December 22, 2021, included data of 210 hospitalization and death incident reports received by the Board between January 1, 2017, and June 30, 2021. Of those 210 incident reports, 88 hospitalization reports and 23 death reports were related to anesthesia and/or sedation.

For this Supplemental Report, the reporting period was updated to include all incident reports submitted to the Board from January 1, 2017, through December 31, 2021. During the six-month

period from July 1, 2021, to December 31, 2021, the Board received 16 hospitalization reports that were possibly anesthesia and/or sedation related, and one death report that was possibly anesthesia and/or sedation related.

In addition, during the comprehensive review of the incident reports submitted to the Board, Board staff became aware that not all reported incidents were captured in the original Report due to data entry errors and changes in internal report processing. Board staff have since updated business processes and the BreEZe system to include new codes to identify hospitalization and deaths reported to the Board. This will allow staff to extract and verify data on a regular basis.

Following the comprehensive incident reports review, Board staff found 372 incident reports were received instead of the previously reported 210. Of the 372 incident reports submitted to the Board, 324 were for hospitalizations of a patient either during or after a dental procedure, and 48 reports were for the death of a patient either during or after a dental procedure. However, 186 incident reports did not include the administration of anesthesia or sedation to the dental patient and have been excluded from this Supplemental Report. Of the remaining 186 incident reports that did include administration of anesthesia and/or sedation, 162 reports involved patient hospitalization, and 24 reports involved patient death during or shortly after the dental procedure.

STATISTICAL FINDINGS

The charts below have been updated to show the statistical findings related to adverse events after the administration of anesthesia and/or sedation before or during dental procedures. The data is based on incident reports submitted by dental licensees, physicians and surgeons, anesthesiologists, and other various sources from the period of January 1, 2017, to December 31, 2021.

The Board presents its findings and provides a breakdown of the incident reports, which include the number of patient deaths and hospitalizations that may have been a result of complications during the administration of anesthesia and/or sedation for a dental procedure. During the reporting period, 372 incident reports were received. Of the 372 incident reports submitted to the Board, 324 were for hospitalizations of a patient either during or after a dental procedure, and 48 reports were for the death of a patient either during or after a dental procedure. However, only 186 of those incident reports involved the administration of anesthesia or sedation to the dental patient. Of the 186 incident reports that included administration of anesthesia and/or sedation to dental patients, 162 reports involved patient hospitalization, and 24 reports involved patient death during or shortly after the dental procedure.

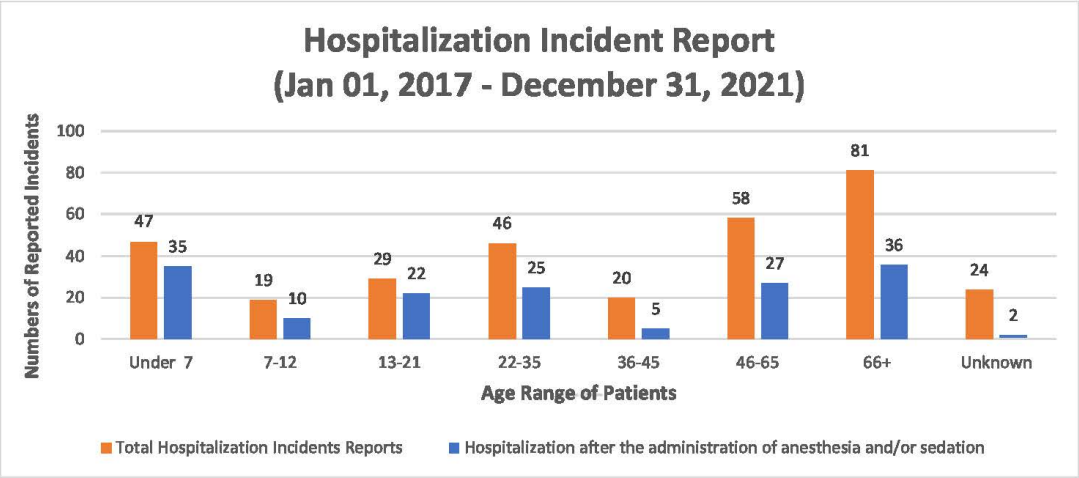
The data provided in this Supplemental Report has been categorized by age group with the assistance of the Board's subject matter experts. The different age groups are broken down as follows:

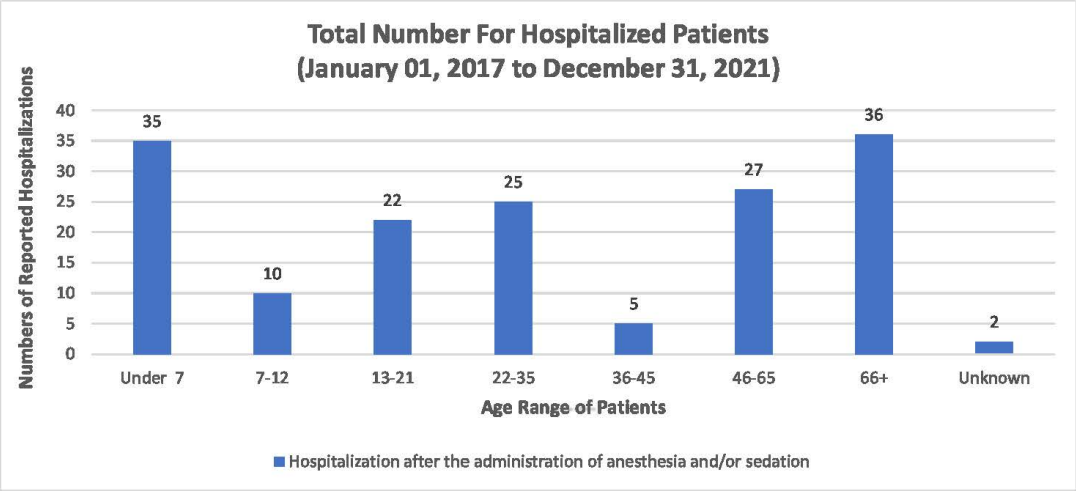
- Pediatric (Under 7 years)
- Older Pediatric (Ages 7-12)

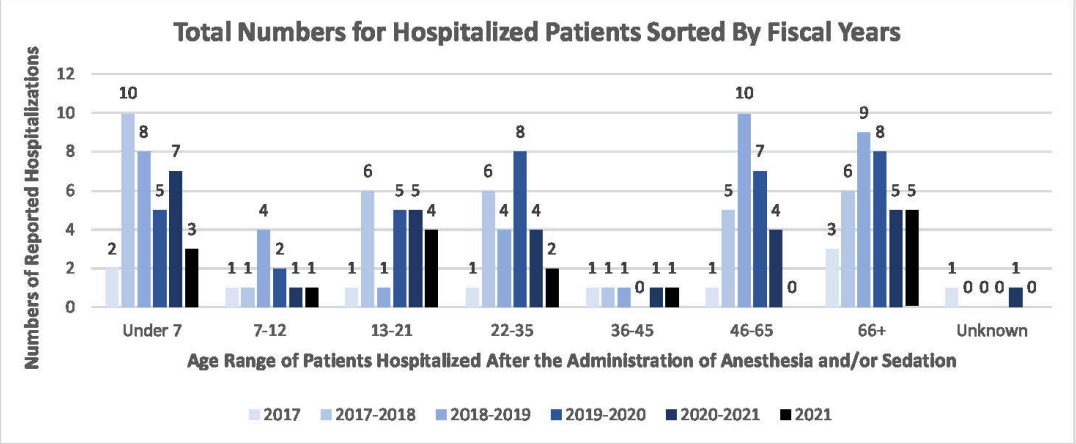
- Adolescents (Ages 13-21)
- Young Adults (Ages 22-35)
- Adults (Ages 36-45)
- Middle-Aged (Ages 46-65)
- Senior (Ages 66+)

The data is sorted by fiscal year and includes the patient's age, sex, ASA physical status, if the patient had any coexisting diagnoses, the setting where the sedation and dental procedure took place, the category of the provider responsible for sedation oversight, the category of the provider that delivered the sedation, the category of provider(s) monitoring the patient, the planned depth of sedation, and the investigative outcomes for the hospitalizations or deaths where anesthesia and/or sedation was administered.

Hospitalization Incident Reports by Age Group





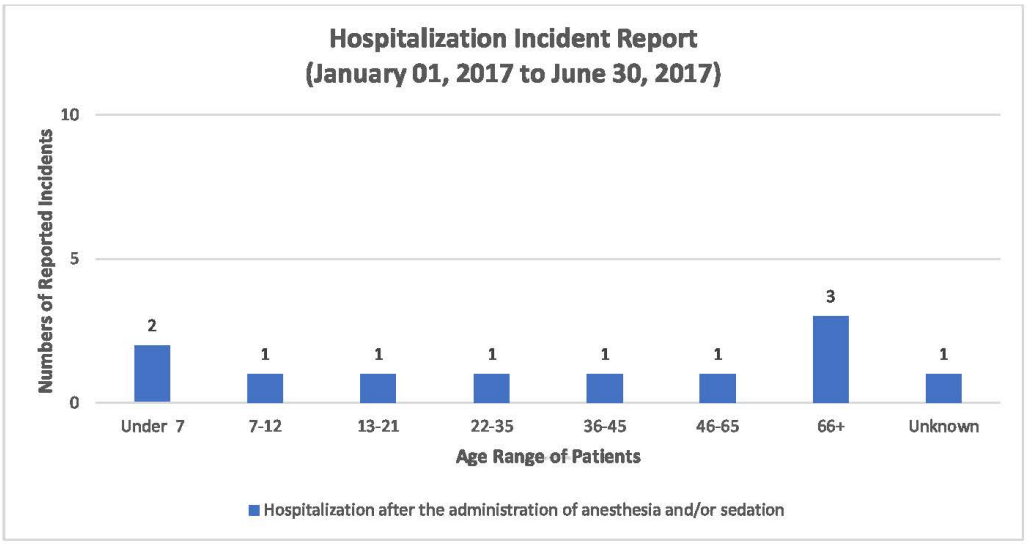


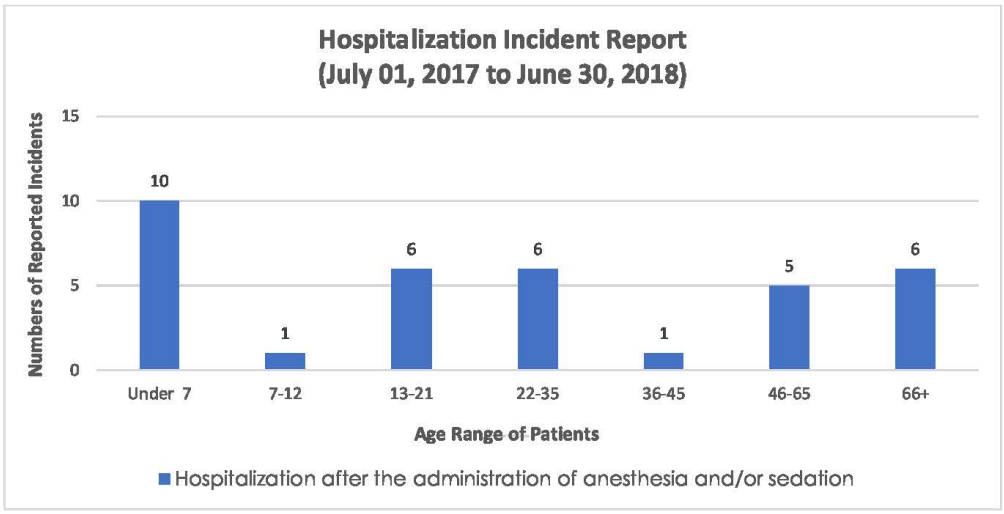
- The first chart reflects the total numbers of hospitalization incident reports, and of those reports, how many were hospitalizations after the administration of anesthesia and/or sedation during the reporting period. The second chart is a reiteration of the first chart but represents the total numbers of reported hospitalizations for that same time frame possibly related to the administration of anesthesia and/or sedation during dental treatments. The third chart represents the numbers of patients hospitalized throughout the various fiscal years by age groups possibly related to the administration of anesthesia and/or sedation during

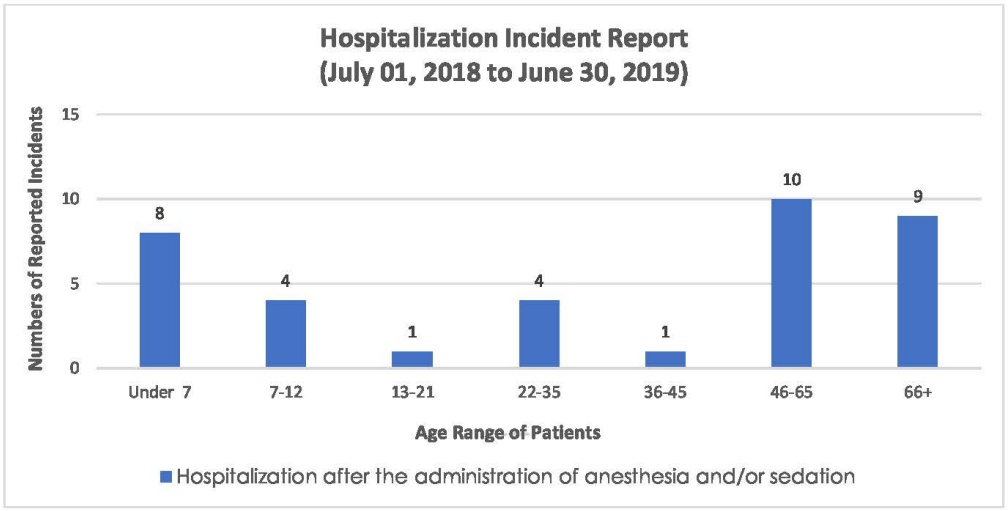
dental treatments. This chart is presented to provide a comparison of any possible trends during this period.

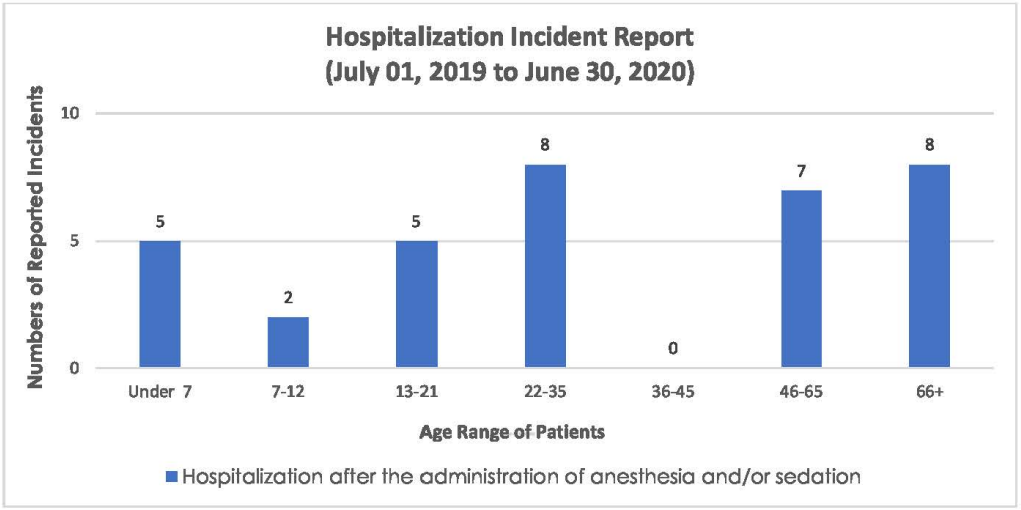
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of 47 incident reports, and of those, 35 were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For older pediatric patients ages 7-12, there were a total of 19 incident reports, and of those, 10 were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For adolescent patients ages 13-21, there were a total of 29 incident reports, and of those, 22 were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For young adult patients ages 22-35, there were a total of 46 incident reports and of those, 25 were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For adult patients ages 36-45, there were a total of 20 incident reports, and of those, five were hospitalized possibly due to anesthesia and/or sedation related treatment.
  - For middle-aged patients ages 46-65, there were a total of 58 incident reports, and of those, 27 were hospitalized possibly to due anesthesia and/or sedation related treatment.
  - For senior patients ages 66 and up, there were a total of 81 incident reports, and of those, 36 were hospitalized possibly to due anesthesia and/or sedation related treatment.
  - For patients of unknown ages, there were a total of 24 incident reports, and of those, 2 were hospitalized possibly to due anesthesia and/or sedation related treatment.
- From the date of the initial mandate (January 01, 2017) through December 31, 2021, data provided is collected by the Board and recorded as hospitalizations due to possible complications from the administration of anesthesia and/or sedation before and during the patient's dental procedure. The specific reports indicate that anesthesia and/or sedation were given before or during the procedure prior to hospitalization. However, the reason for hospitalization may have been due to outside factors and not due to administration of anesthesia and/or sedation. Accordingly, the term "possibly" is used to accommodate for hospitalization that may or may not have been the result of anesthesia and/or sedation administered to the patient.

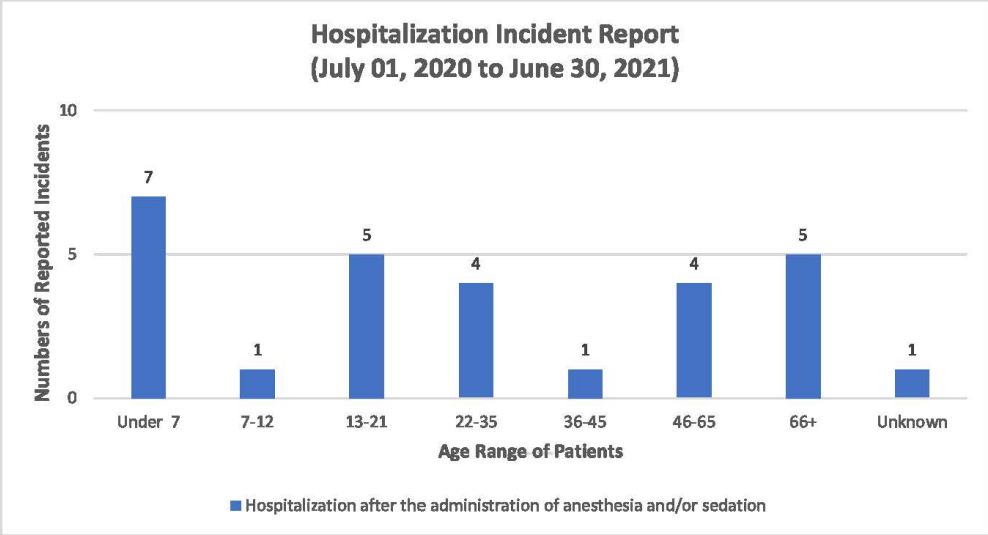
- The charts below show the numbers of hospitalizations during each fiscal period:





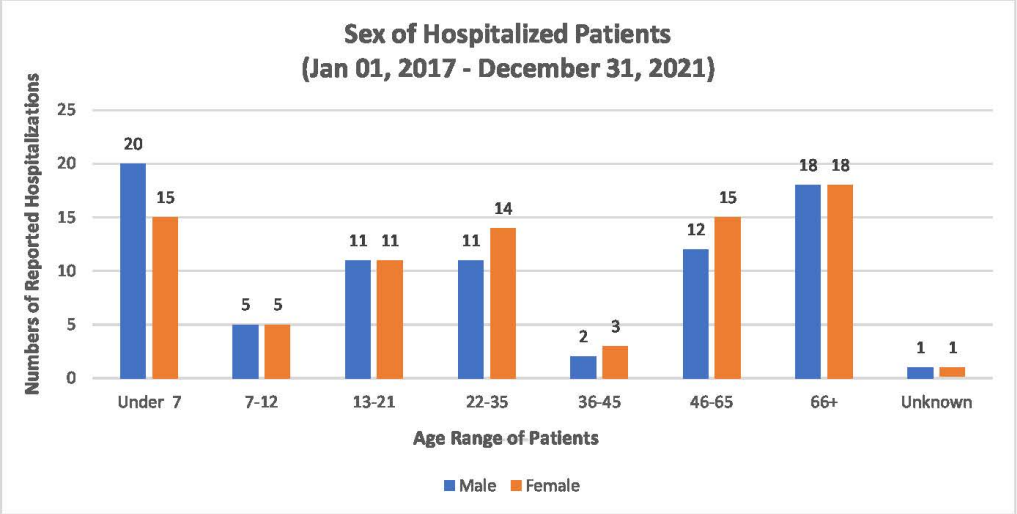

Hospitalization Incident Report
(July 01, 2018 to June 30, 2019)
Numbers of Reported Incidents
15
10
5
0
8
4
1
4
1
10
9
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation

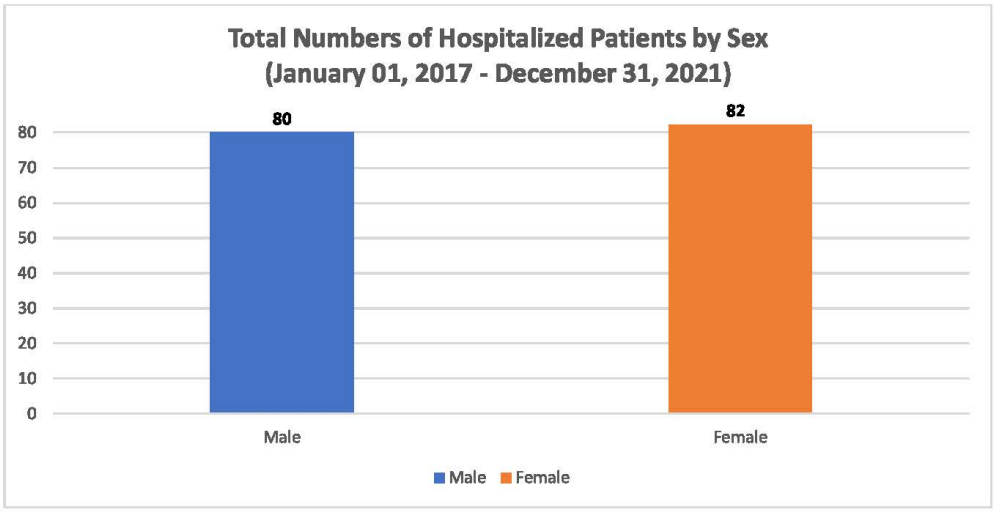

Hospitalization Incident Report
(July 01, 2019 to June 30, 2020)
Numbers of Reported Incidents
10
5
0
5
2
5
8
0
7
8
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation


Hospitalization Incident Report
(July 01, 2020 to June 30, 2021)
Numbers of Reported Incidents
10
5
0
7
1
5
4
1
4
5
1
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Unknown
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation


Hospitalization Incident Report
(July 01, 2021 to December 31, 2021)
Numbers of Reported Incidents
10
5
0
3
1
4
2
1
0
5
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Hospitalization after the administration of anesthesia and/or sedation

Sex of Hospitalized Patients by Age Group



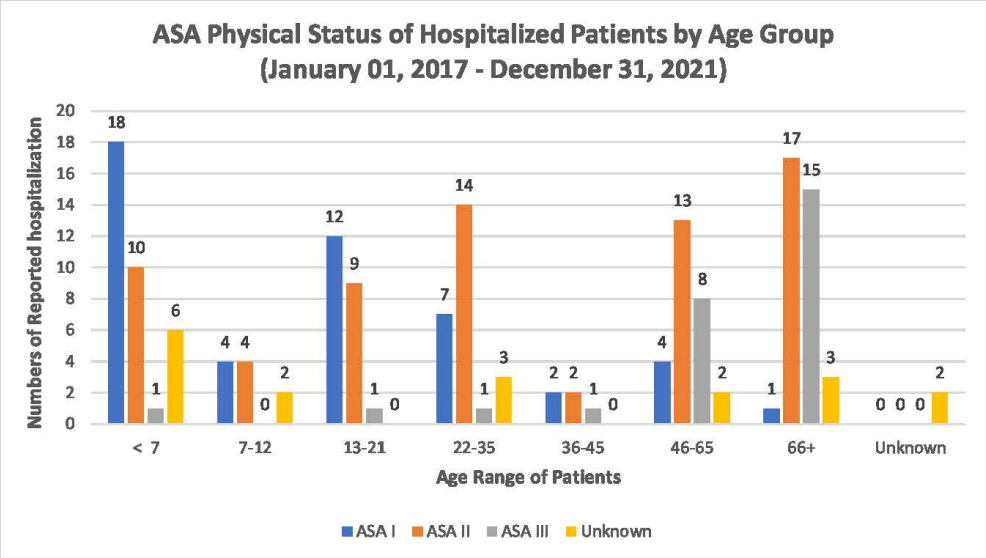


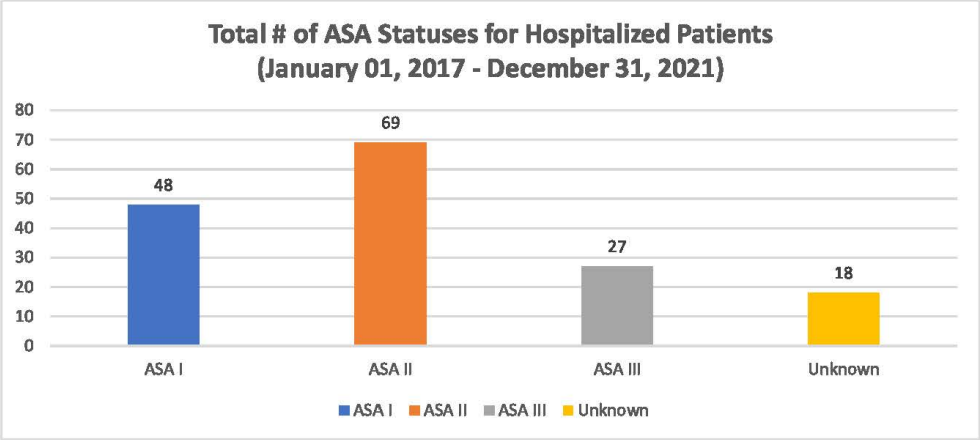
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of 35 hospitalization reports (20 were males, and 15 were females).
  - For older pediatric patients ages 7-12, there were a total of 10 hospitalization reports (5 were males, and 5 were females).

- For adolescent patients ages 13-21, there were a total of 22 hospitalization reports (11 were males, and 11 were females).
- For young adult patients ages 22-35, there were a total of 25 hospitalization reports (11 were males, and 14 were females).
- For adult patients ages 36-45, there were a total of five hospitalization reports (2 were males, and 3 were females).
- For middle-aged patients ages 46-65, there were a total of 27 hospitalization reports (12 were males, and 15 were females).
- For senior patients ages 66 and up, there were a total of 36 hospitalization reports (18 were males, and 18 were females).
- For patients of unknown age, there were a total of 2 hospitalization reports (1 was male, and 1 was female).

- According to the data collected, the ratio of males to females was overall similar in number. Overall, there did not appear to be any significant discrepancy among the numbers to indicate that one sex is more prone than another when it comes to the number of those hospitalized due to possible anesthesia and or sedation related incidents.

ASA Physical Status of Hospitalized Patients by Age Group



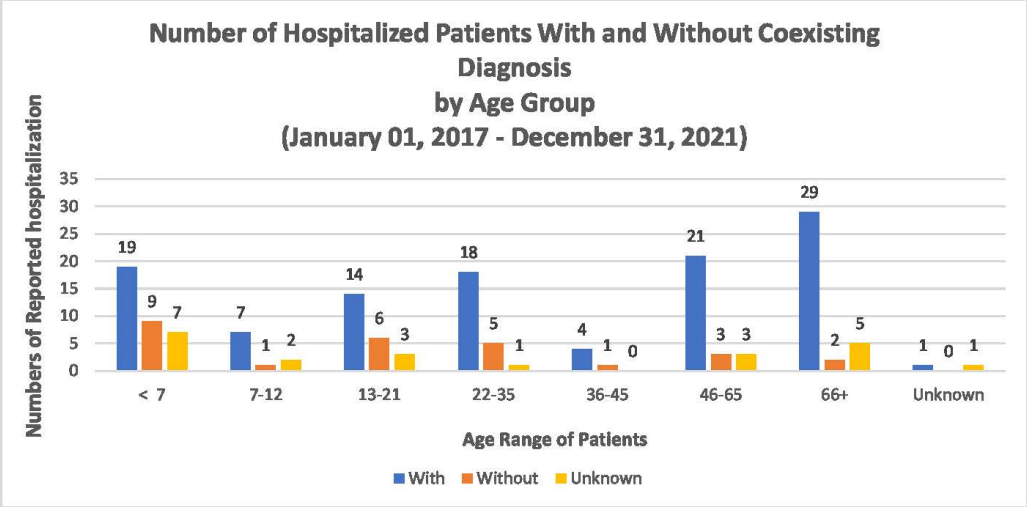


- According to the ASA, the ASA Physical Status Classification System has been in use for over 60 years. The purpose of the system is to assess and communicate a patient's pre-anesthesia medical co-morbidities. The classification does not predict the perioperative risks, but used with other factors (e.g., type of surgery, facility, level of deconditioning), it can be helpful in predicting perioperative risks.
- The general guidelines of the ASA Physical Status Classification System are outlined below:
  - ASA I: A normal healthy patient
  - ASA II: A patient with mild systemic disease
  - ASA III: A patient with severe systemic disease
  - ASA IV: A patient with severe systemic disease that is a constant threat to life (none reported)
  - ASA V: A moribund patient who is not expected to survive without the operation (none reported)
  - ASA VI: A declared brain-dead patient whose organs are being removed for donor purposes (none reported)
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age: 18 patients were considered healthy, 10 as having mild systemic disease, one with severe systemic disease, and six patients whose ASA statuses were unknown.

- For older pediatric patients ages 7-12: four patients were considered healthy, four as having mild systemic disease, none with severe systemic disease, and two were unknown.
- For adolescent patients ages 13-21: 12 patients were considered healthy, nine as having mild systemic disease, and one with severe systemic disease, and none were unknown.
- For young adult patients ages 22-35: seven patients were considered healthy, 14 as having mild systemic disease, and one with severe systemic disease, and three patients whose ASA statuses were unknown.
- For adult patients ages 36-45: two patients were considered healthy, two as having mild systemic disease, and one with severe systemic disease, and none were unknown.
- For middle-aged patients ages 46-65: four patients were considered healthy, 13 as having mild systemic disease, and eight with severe systemic disease, and two whose ASA statuses were unknown.
- For senior patients ages 66 and up: one patient was considered healthy, 17 as having mild systemic disease, and 15 with severe systemic disease, and three whose ASA statuses were unknown.
- For patients of unknown age, none were considered healthy, none as having mild systemic disease, none with severe systemic disease, and two whose ASA statuses were unknown.

- According to the data collected, the total number of patients in every age group combined that were considered "normal healthy patient" were 48, 69 were considered as those with mild systemic disease, 27 were considered as those with severe systemic disease, and 18 that were not disclosed by the licensees. Most younger patients hospitalized were normal healthy patients, but beginning with the middle-aged group, there are higher numbers of ASA statuses of II and III. It is known that health declines as one gets older. Although the ASA guidelines go up to level VI, there were no reports of any hospitalized patients who were considered greater than level III.

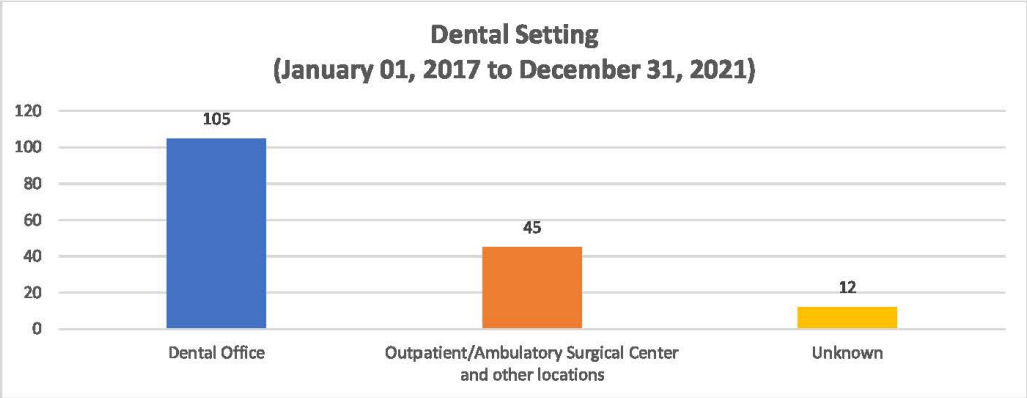
Number of Hospitalized Patients With and Without Coexisting Diagnosis by Age Group



- These charts represent the coexisting diagnosis information reported to the Board for hospitalized patients as: had a coexisting diagnosis; did not have a coexisting diagnosis or the coexisting diagnostic section was left blank and, for purposes of this data, is unknown. A total of 113 hospitalized patients were found to have a coexisting diagnosis, 27 did not have a coexisting diagnosis, and 22 that were not disclosed by the licensees. Predictably, there were higher numbers of serious coexisting diagnoses, such as hypertension, diabetes, liver disease, and other serious conditions, from age 46 and older. These numbers are for hospitalizations

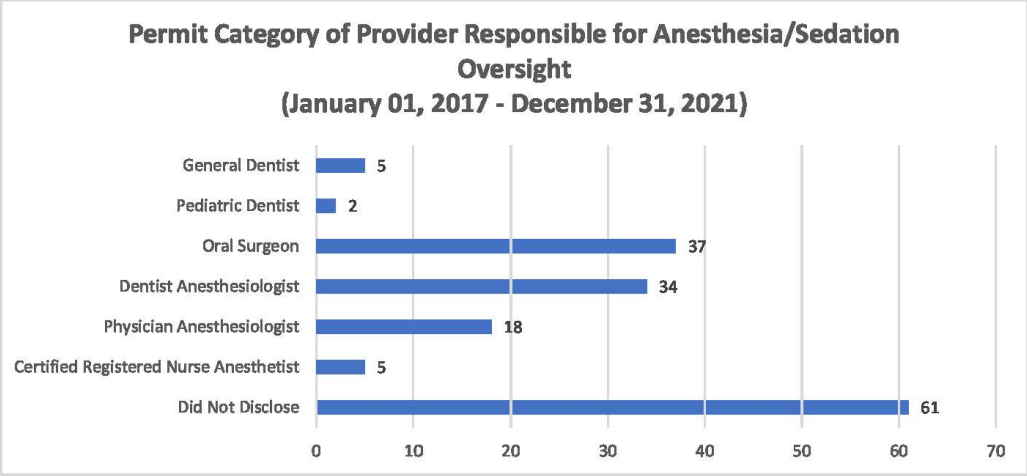
possibly due to the anesthesia and/or sedation administered, but the patients' coexisting diagnoses also could have played a role in their hospitalization, and this could hold truer for the older age groups.

Dental Setting of Those Who Were Hospitalized



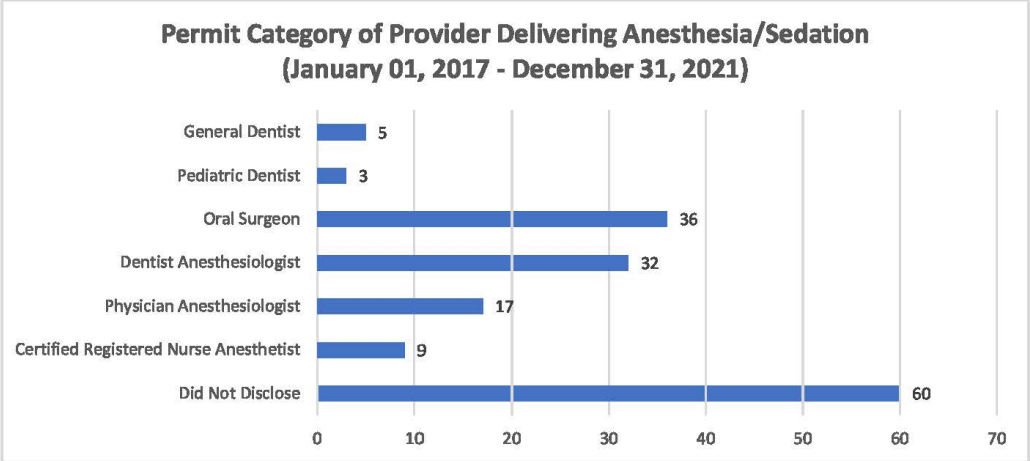
- This chart represents the setting of the dental procedures that resulted in hospitalization possibly due to the administration of anesthesia and/or sedation treatment. Out of the total 162 reports of dental treatment that resulted in hospitalization, 105 were conducted in a dental office; 45 were conducted in outpatient/ambulatory surgical centers and other locations that were not a dental office; and 12 with locations that were not disclosed by the licensees.

Category of Provider Responsible for Anesthesia or Sedation Oversight for Patients Who Were Hospitalized



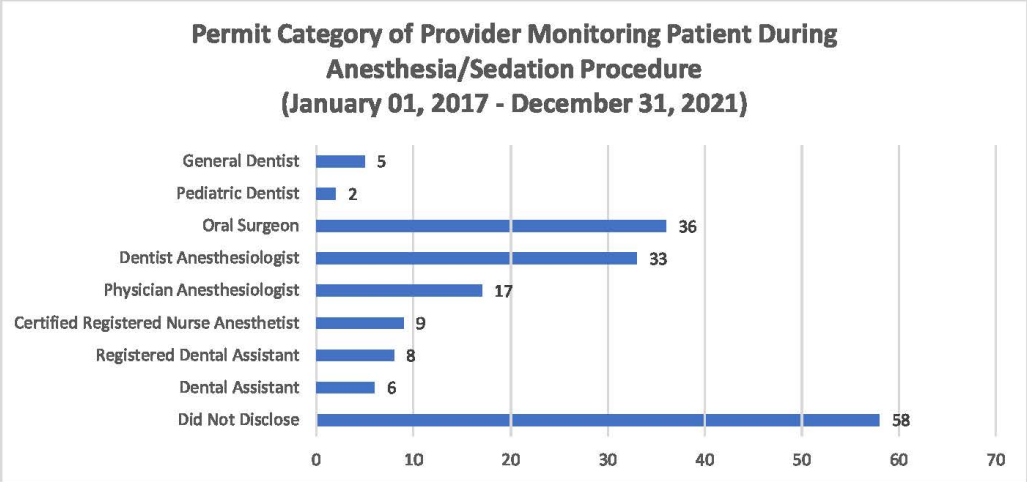
- This chart represents the category of the providers responsible for anesthesia or sedation oversight in cases where the patients were hospitalized possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 162 cases of reported hospitalizations, five of the care providers were identified as general dentists.
  - Two of the care providers were pediatric dentists.
  - Thirty-seven of the care providers were identified as oral surgeons.
  - Thirty-four of the care providers were identified as dentist anesthesiologists.
  - Eighteen of the care providers were identified as physician anesthesiologists.
  - Five of the care providers were identified as certified registered nurse anesthetists.
  - Sixty-one of the care providers had either left this section blank or incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

Category of Provider Delivering Anesthesia or Sedation for Patients Who Were Hospitalized



- This chart represents the category of the providers who delivered the anesthesia or sedation to patients who were hospitalized possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 162 cases of reported hospitalizations, five of the care providers were identified as general dentists.
  - Three of the care providers were identified as pediatric dentists.
  - Thirty-six of the care providers were identified as oral surgeons.
  - Thirty-two of the care providers were identified as dentist anesthesiologists.
  - Seventeen of the care providers were identified as physician anesthesiologists.
  - Nine of the care providers were identified as certified registered nurse anesthetists.
  - Sixty of the care providers had either left this section blank or incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

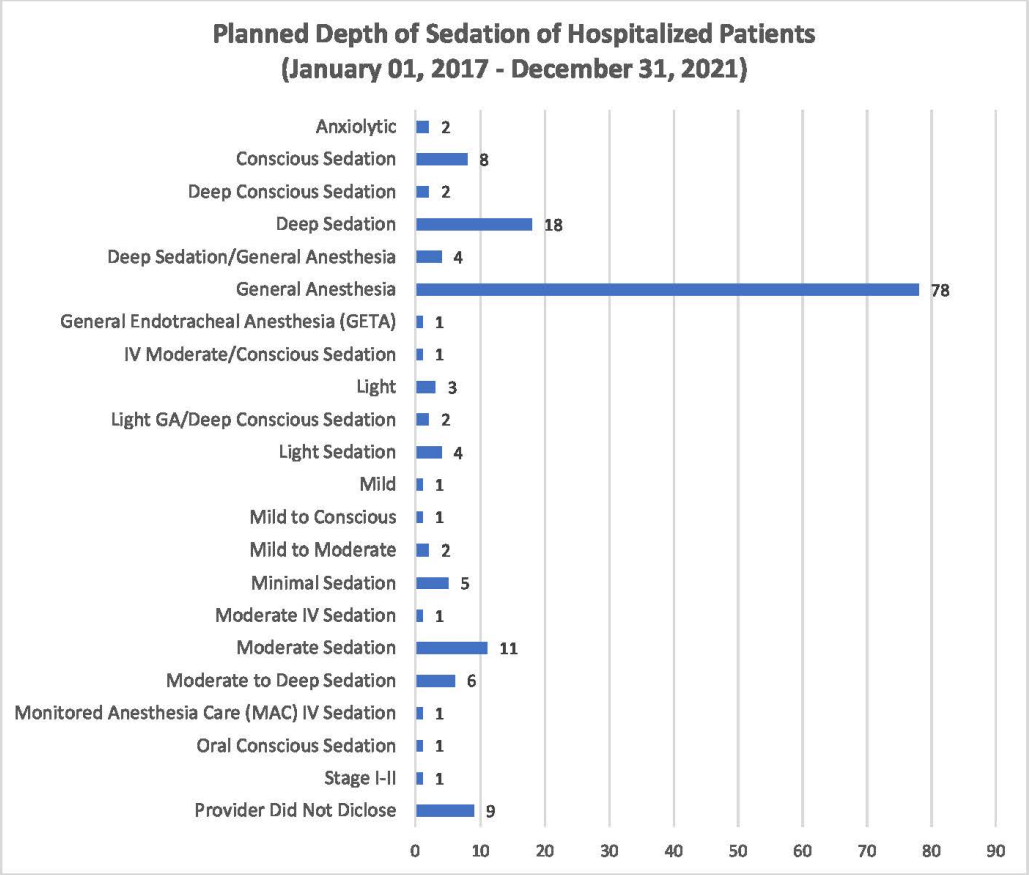
Category of Provider Monitoring During Anesthesia or Sedation for Patients Who Were Hospitalized



- This chart represents the category of the providers responsible for monitoring the patients during sedation who were hospitalized possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises. Please note that in some reported cases, there were multiple providers monitoring the patient during the procedure; therefore, 173 total care providers are reported in this category.
  - Of the 162 cases of reported hospitalizations, five of the care providers were identified as general dentists.
  - Two care providers were identified as pediatric dentists.
  - Thirty-six of the care providers were identified as oral surgeons.
  - Thirty-three of the care providers were identified as dentist anesthesiologists.
  - Seventeen of the care providers were identified as physician anesthesiologists.
  - Nine of the care providers were identified as certified registered nurse anesthetists.
  - Eight of the care providers were identified as registered dental assistants.
  - Six of the care providers were identified as dental assistants.

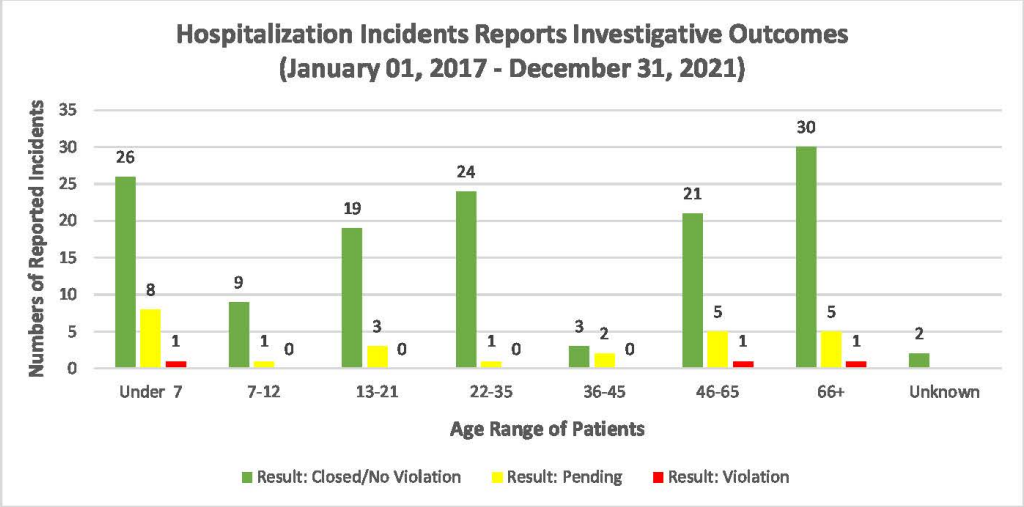
- Fifty-eight of the care providers had either left this section blank or incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

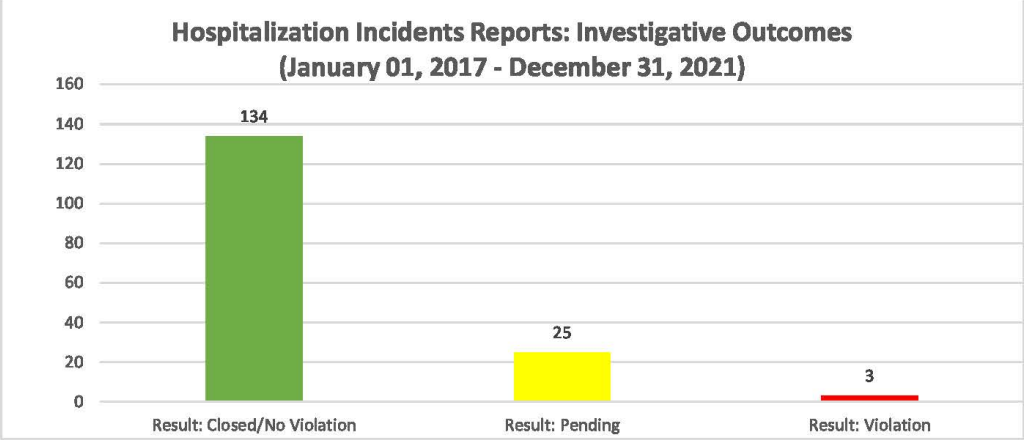
Planned Depth of Sedations of Hospitalized Patients



- This chart represents the planned depth of sedation for patients who were hospitalized possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises. Please note that the planned depth of sedation is not a set category and the information provided in the chart represents the provider's response on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

Hospitalization Incident Reports: Investigative Outcomes





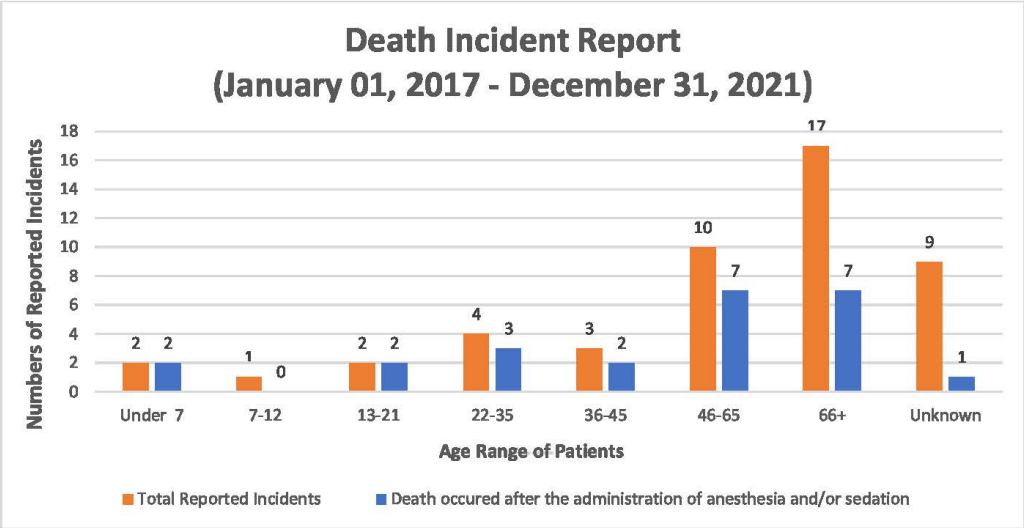
- These two charts represent the Board's investigative outcomes from January 1, 2017, to December 31, 2021, for all reported hospitalizations where anesthesia and/or sedation was administered.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, a total of 35 incident reports of hospitalization were received. Of those, 26 cases resulted in no violations, one case resulted in a violation, and eight cases are currently pending.

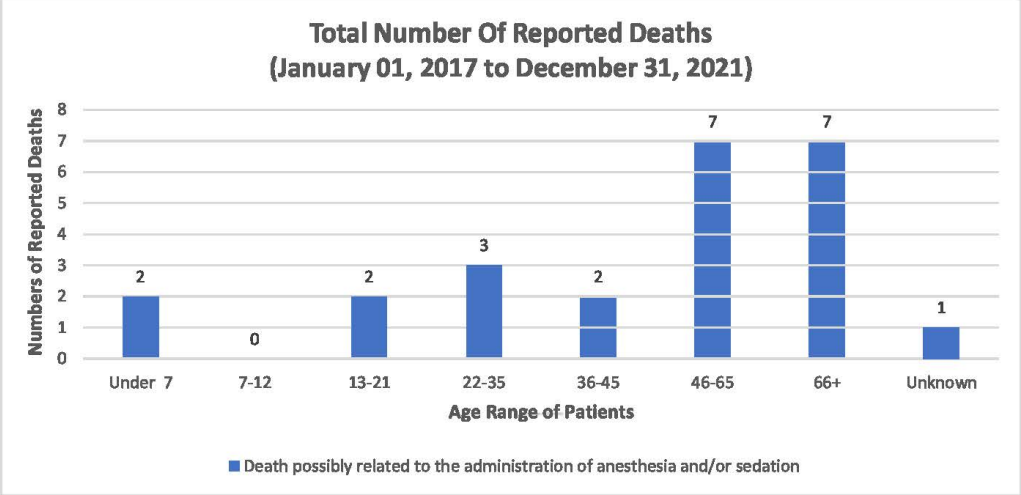
- For older pediatric patients ages 7-12, there were a total of 10 incident reports of hospitalization. Of those, nine cases resulted in no violations, and one case is currently pending
- For adolescent patients ages 13-21, there were a total of 22 incident reports of hospitalization; Of those, 19 cases resulted in no violations, and three cases are currently pending.
- For young adult patients ages 22-35, there were a total of 25 incident reports of hospitalization. Of those, 24 cases resulted in no violations, and one case is currently pending.
- For adult patients ages 36-45, there were a total of five incident reports of hospitalization. Of those, three cases resulted in no violations, and two cases are currently pending.
- For middle-aged patients ages 46-65, there were a total of 27 incident reports of hospitalization. Of those, 21 cases resulted in no violations, one case resulted in a violation, and five cases are currently pending.
- For senior patients ages 66 and up, there were a total of 36 incident reports of hospitalization. Of those, 30 cases resulted in no violations, one case resulted in a violation, and five cases are currently pending.
- For patients of unknown age, there were a total of two incident reports of hospitalization; both cases resulted in no violations occurring.

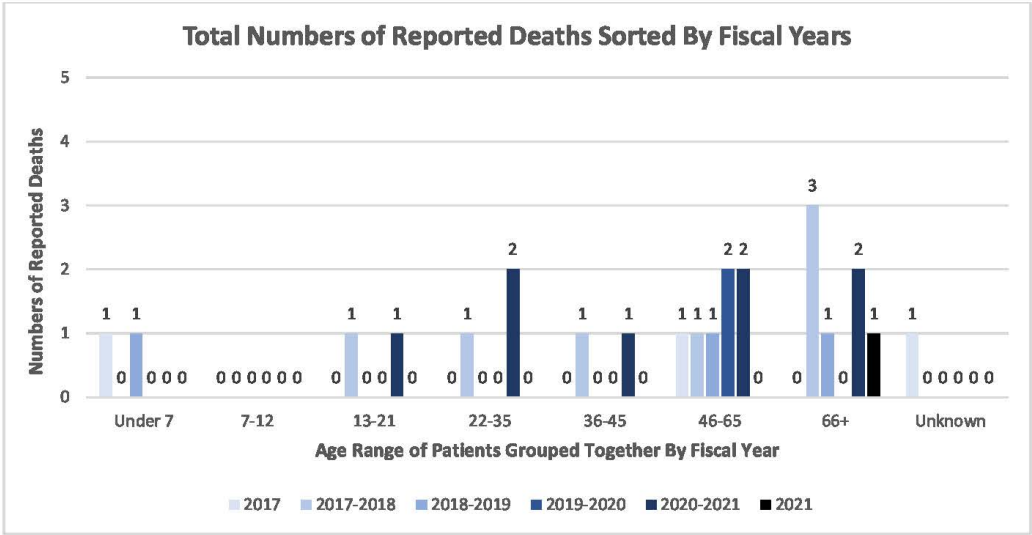
o Percentages of the case results are broken down as follows:

- 82.72% of cases were "Closed – No Violation"
- 15.43% of cases are in "Pending" status
- 1.85% of cases were "Violation"

Death Incident Reports by Age Group



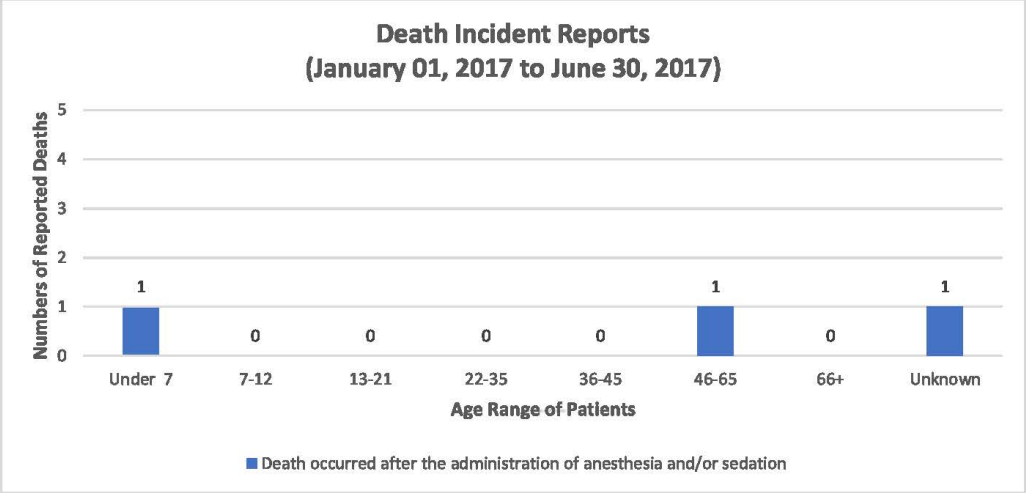


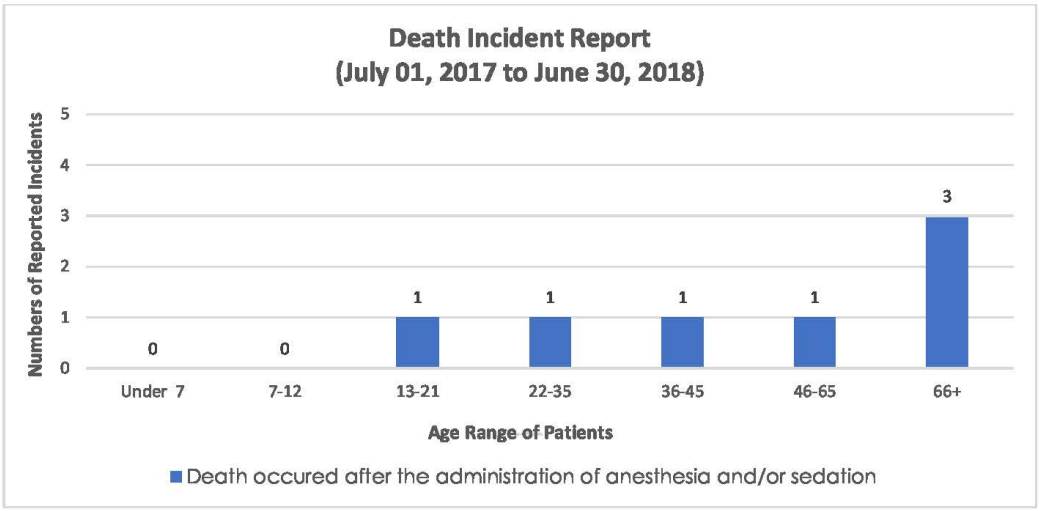


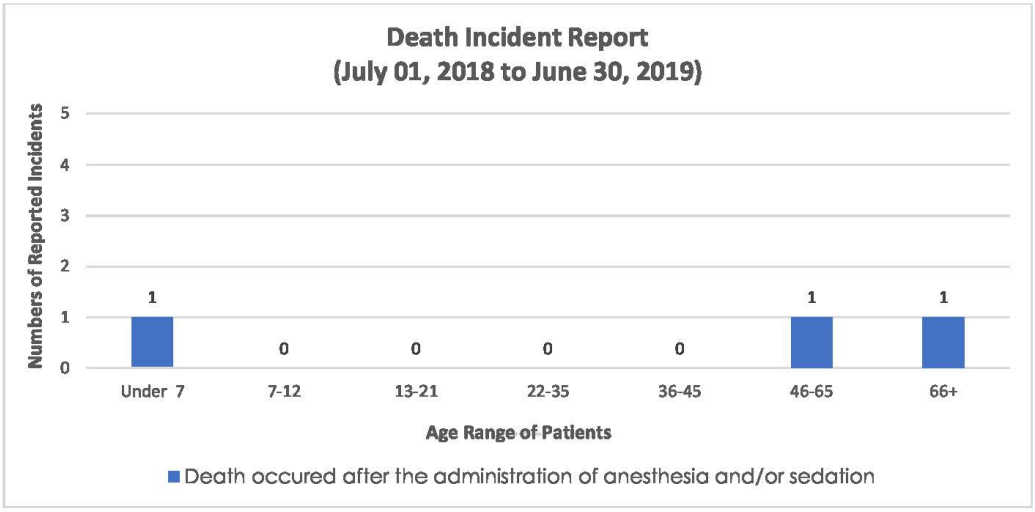
- The first chart reflects the total number of incidents reported and how many resulted in deaths possibly related to the administration of anesthesia and/or sedation during dental treatments during the reporting period. The second chart is a reiteration of the first chart but represents only the total numbers of reported deaths for that same time frame possibly related to the administration of anesthesia and/or sedation during dental treatments. The third chart represents the numbers of reported deaths throughout the various fiscal years via their age groups possibly related to the administration of anesthesia and/or sedation during dental treatments. This chart is presented to provide a comparison of any possible trends throughout this period of review.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of four incident reports, and of those, two resulted in death possibly due to anesthesia and/or sedation related treatment.
  - For older pediatric patients ages 7-12, there was a total of one incident report, which was not due to anesthesia and/or sedation related treatment.
  - For adolescent patients ages 13-21, there were a total of four incident reports, and of those, two resulted in death possibly due to anesthesia and/or sedation related treatment.
  - For young adult patients ages 22-35, there were a total of seven incident reports, and of those, three resulted in death that was possibly due to anesthesia and/or sedation related treatment.

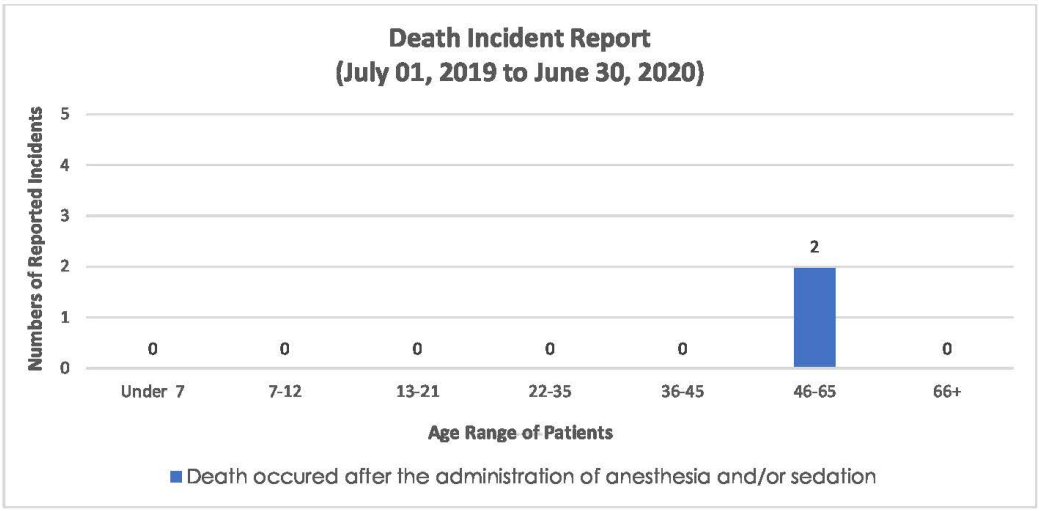
- For adult patients ages 36-45, there were a total of three incident reports, and of those, two resulted in death possibly due to anesthesia and/or sedation related treatment.
- For middle-aged patients ages 46-65, there were a total of 17 incident reports, and of those, seven resulted in death possibly to due anesthesia and/or sedation related treatment.
- For senior patients ages 66 and up, there were a total of 24 incident reports, and of those, seven resulted in death possibly due anesthesia and/or sedation related treatment.
- For patients of unknown age, there were a total of 10 incident reports, and of those, one resulted in death possibly due to anesthesia and/or sedation related treatment.

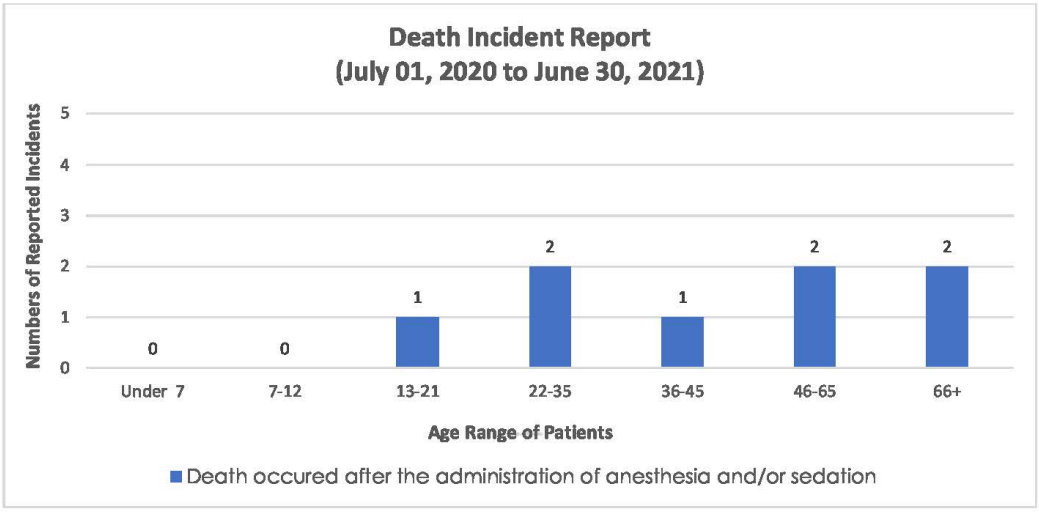
o Below is a breakdown of the numbers of deaths for each fiscal period:

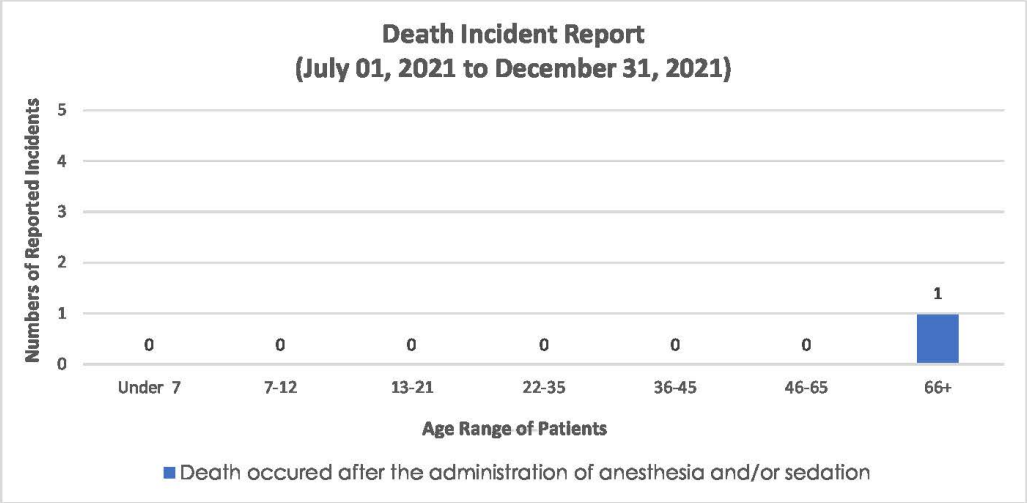



Death Incident Report
(July 01, 2017 to June 30, 2018)
Numbers of Reported Incidents
5
4
3
2
1
0
0
0
1
1
1
1
3
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation

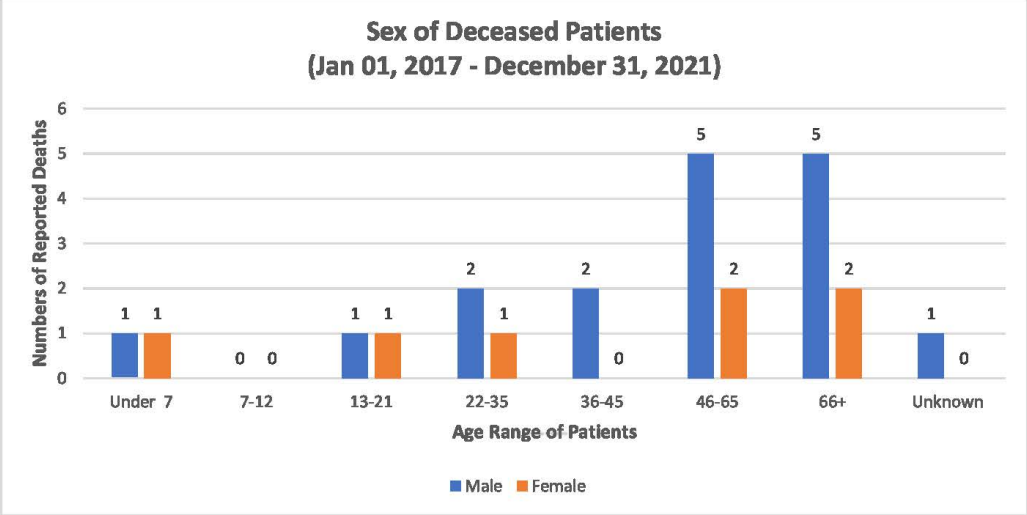

Death Incident Report
(July 01, 2018 to June 30, 2019)
Numbers of Reported Incidents
5
4
3
2
1
0
1
0
0
0
0
1
1
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation


Death Incident Report
(July 01, 2019 to June 30, 2020)
Numbers of Reported Incidents
5
4
3
2
1
0
0
0
0
0
0
2
0
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation


Death Incident Report
(July 01, 2020 to June 30, 2021)
Numbers of Reported Incidents
5
4
3
2
1
0
0
0
1
2
1
2
2
Under 7
7-12
13-21
22-35
36-45
46-65
66+
Age Range of Patients
Death occured after the administration of anesthesia and/or sedation



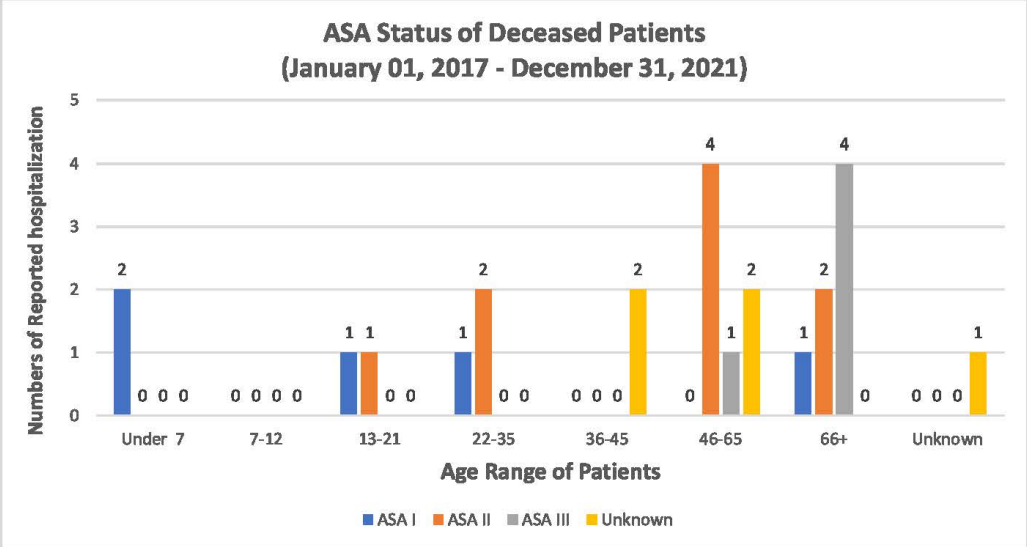
Sex of Deceased Patients by Age Group

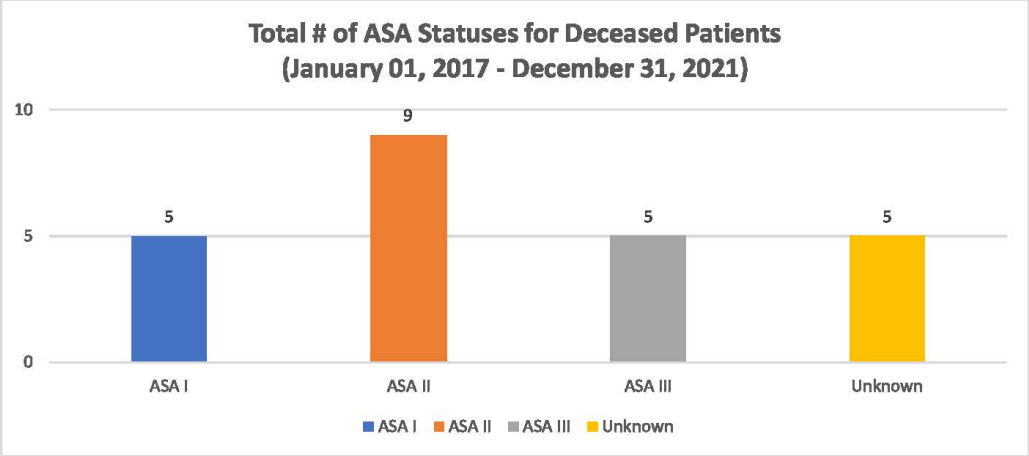


- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were a total of two death reports (1 male and 1 female).
  - For older pediatric patients ages 7-12, there were no reported deaths.

- For adolescent patients ages 13-21, there were a total of two death reports (1 male and 1 female).
- For young adult patients ages 22-35, there were a total of three death reports (2 males and 1 female).
- For adult patients ages 36-45, there were a total of two death reports (2 males).
- For middle-aged patients ages 46-65, there were a total of seven death reports (5 males and 2 females).
- For senior patients ages 66 and up, there were a total of seven death reports (5 males and 2 females).
- For patients of unknown age, there was a total of one death report (one male).

ASA Physical Status of Deceased Patients by Age Group



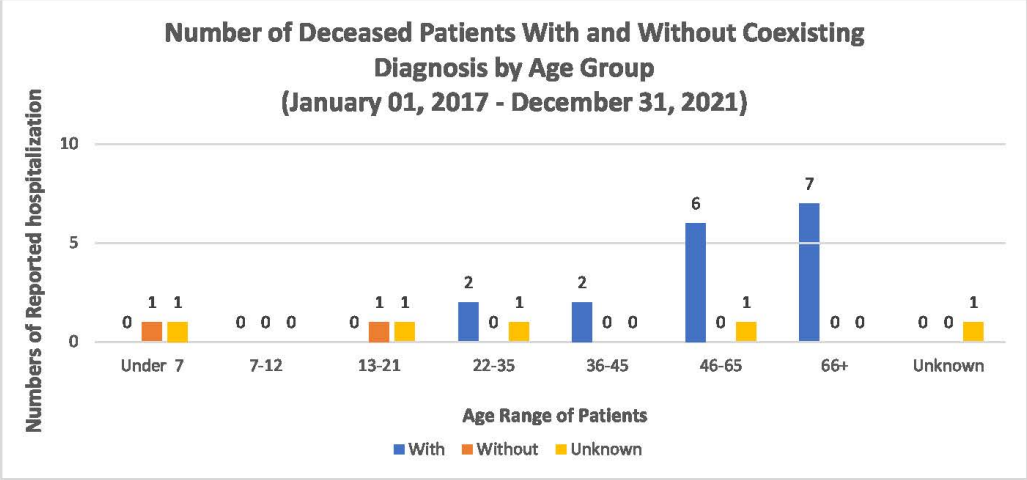


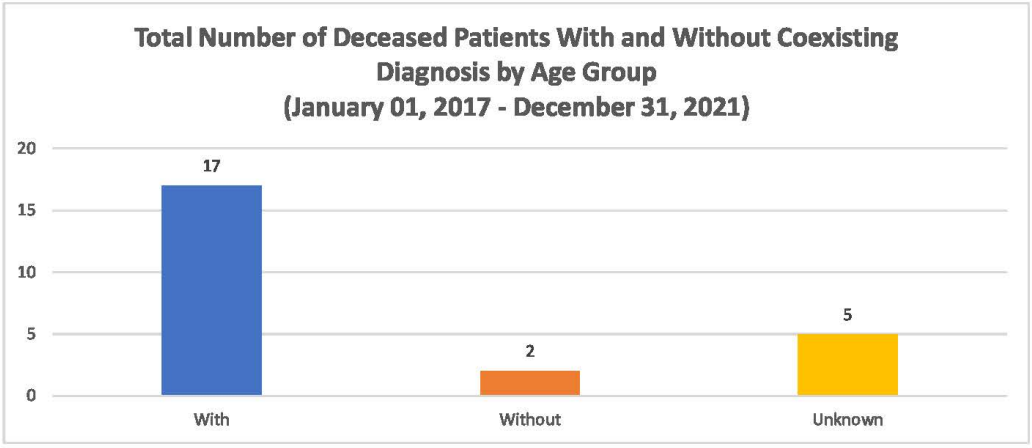
- The general guidelines of the ASA Physical Status Classification System are outlined below:
  - ASA I: A normal healthy patient
  - ASA II: A patient with mild systemic disease
  - ASA III: A patient with severe systemic disease
  - ASA IV: A patient with severe systemic disease that is a constant threat to life (none reported)
  - ASA V: A moribund patient who is not expected to survive without the operation (none reported)
  - ASA VI: A declared brain-dead patient whose organs are being removed for donor purposes (none reported)
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age: both patients were considered healthy.
  - For older pediatric patients ages 7-12: there were no reported deaths.
  - For adolescent patients ages 13-21: one patient was considered healthy, and one was considered as having mild systemic disease.
  - For young adult patients ages 22-35: one patient was considered healthy, and two patients were considered as having mild systemic disease.

- For adult patients ages 36-45: both patients whose ASA status were unknown.
- For middle-aged patients ages 46-65: four patients were considered as having mild systemic disease, one was considered as having severe systemic disease, and two patients whose ASA status were unknown.
- For senior patients ages 66 and up: one patient was considered healthy, two were considered as having mild systemic disease, and four patients were considered as having severe systemic disease.
- For patients whose age are unknown, one patient whose ASA status was unknown.

- In every age group combined, there were five patients considered "normal healthy patient," nine were considered as those with mild systemic disease, five were considered as those with severe systemic disease, and four patients whose status were unknown. Both of the patients from the younger age group were considered healthy, but in the adult patients age group, there were higher numbers of ASA status of II and III similar to the hospitalization statistics. Although the ASA guidelines go up to level VI, there were no reports of any hospitalized patients who were considered a level IV, V, or VI.

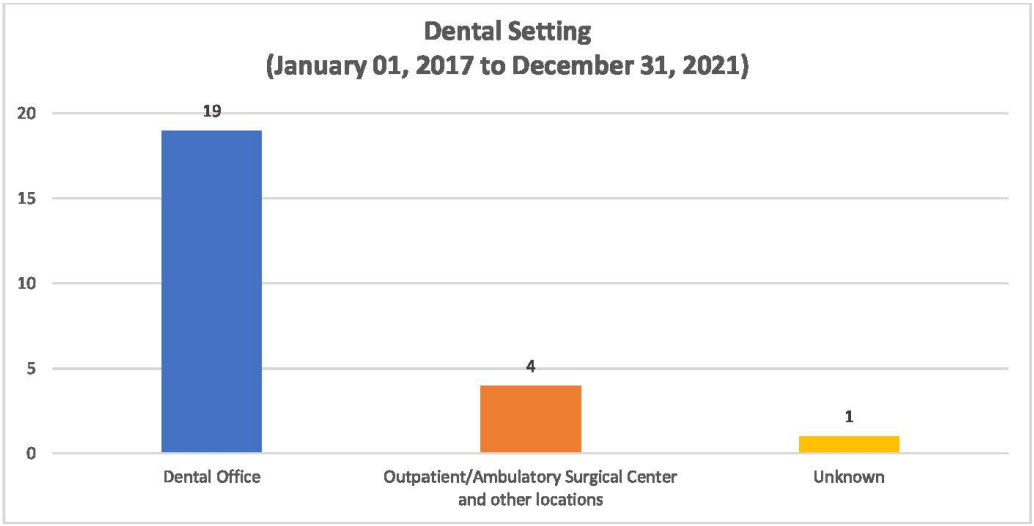
Number of Deceased Patients With and Without Coexisting Diagnosis by Age Group





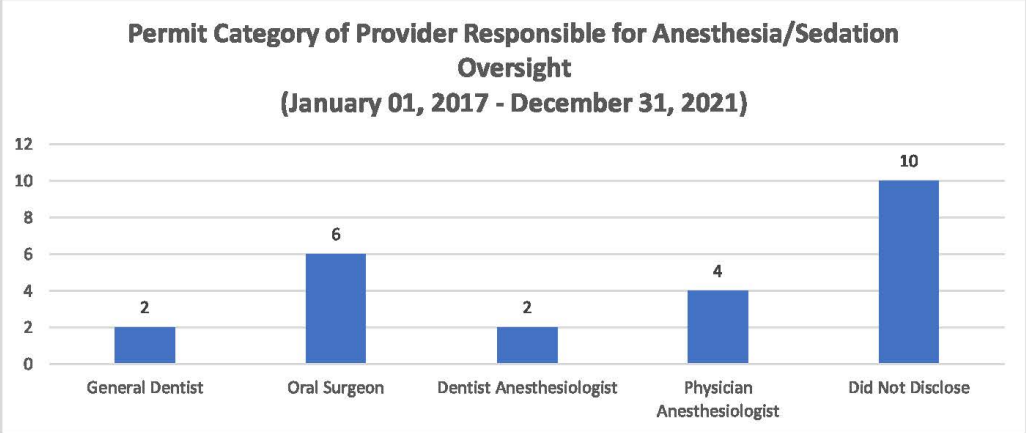
- These charts represent deceased patients who, before their dental procedure, either did or did not have a coexisting diagnosis. A total of 17 deceased patients were found to have a coexisting diagnosis, two patients did not have a coexisting diagnosis, and five patients were unknown. Predictably, there were higher numbers of serious coexisting diagnoses, such as hypertension, diabetes, liver disease, and other serious conditions, beginning at age 46 and older.

Dental Setting Where Anesthesia and/or Sedation May Have Resulted in Patient's Death



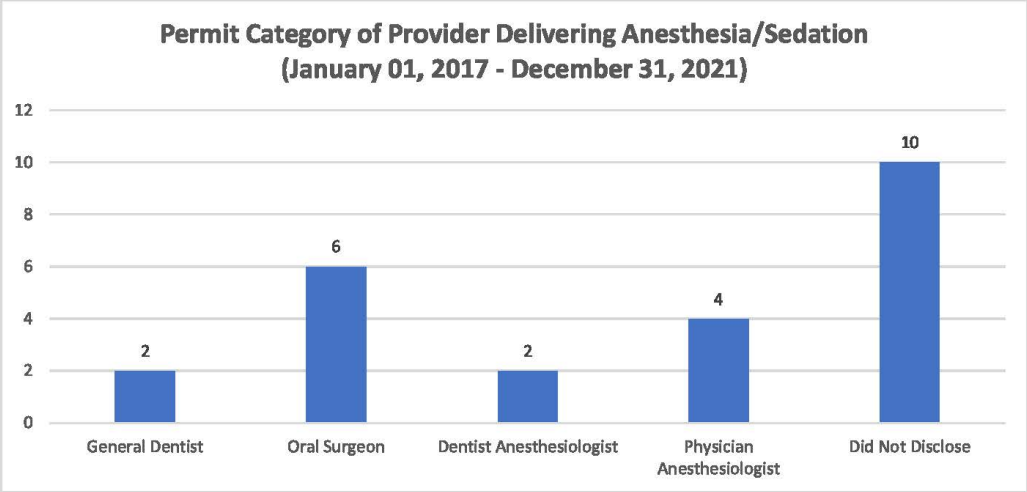
- This chart represents the setting of the dental procedures that resulted in the death of patients possibly due to the administration of anesthesia and/or sedation. Out of the total 24 dental treatments that resulted in death, 19 were conducted in a dental office, seven were conducted in outpatient/ambulatory surgical centers and other locations that were not a dental office, and one location that was not disclosed by the licensee.

Permit Category of Provider Responsible for Anesthesia or Sedation Oversight for Procedure of Deceased Patient



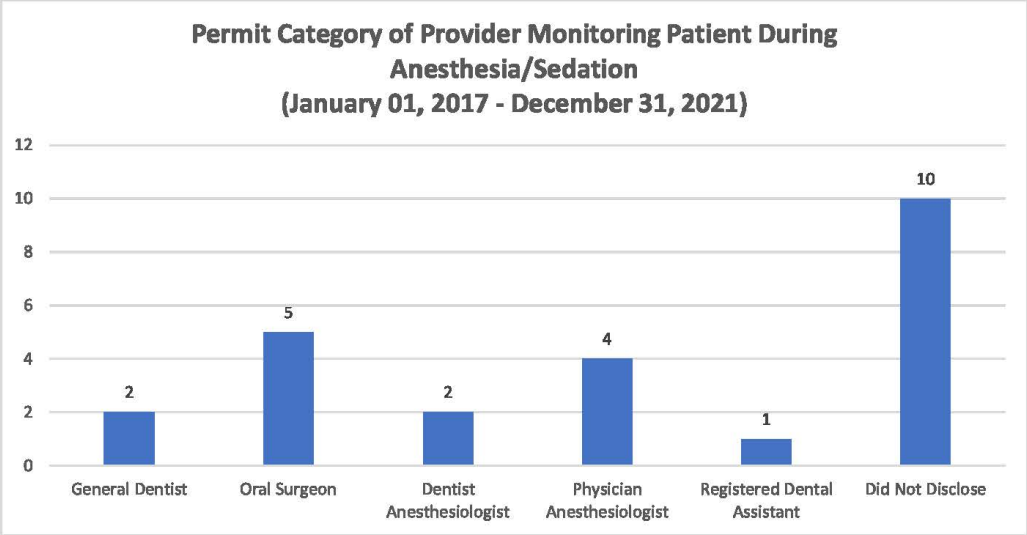
- This chart represents the category of the provider responsible for anesthesia or sedation oversight in cases where the patient had passed away possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 24 cases of reported deaths, two of the care providers were identified as general dentists.
  - Six of the care providers were identified as oral surgeons.
  - Two of the care providers were identified as dentist anesthesiologists.
  - Four of the care providers were identified as physician anesthesiologists.
  - Ten of the care providers had either left this section blank or incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

Permit Category of Provider Delivering Anesthesia or Sedation for Procedure of Deceased Patient



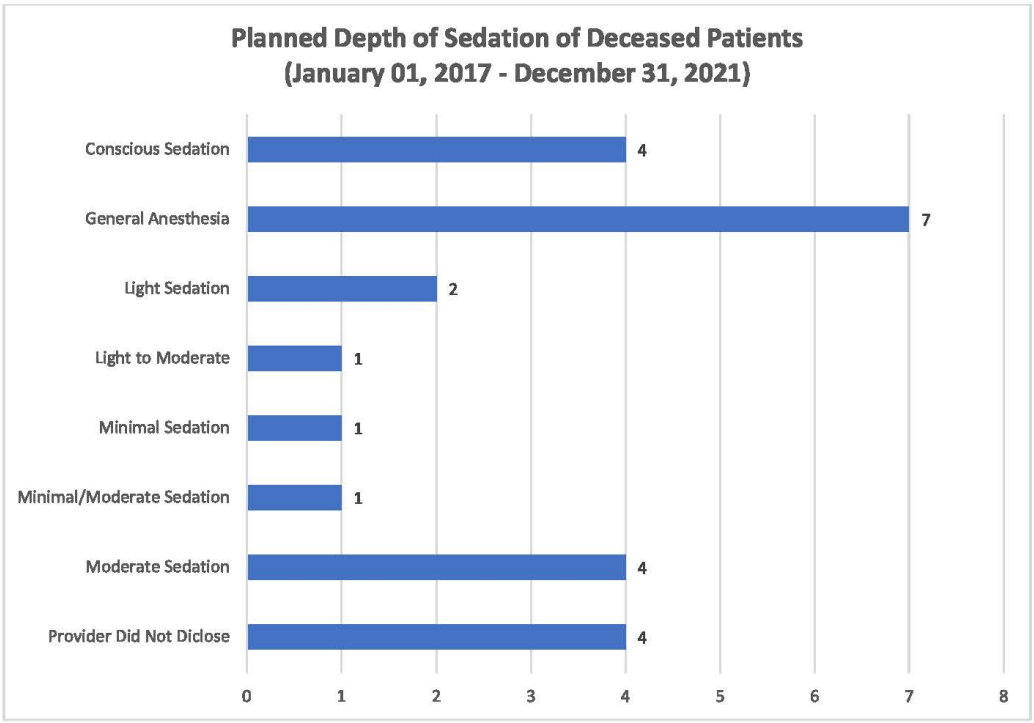
- This chart represents the category of the provider responsible for delivering anesthesia or sedation to patients who passed away possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 24 cases of reported deaths, two of the care providers were identified as general dentists.
  - Six of the care providers were identified as oral surgeons.
  - Two of the care providers were identified as dentist anesthesiologists.
  - Four of the care providers were identified as physician anesthesiologists.
  - Ten of the care providers had either left this section blank or incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

Permit Category of Provider Monitoring During Anesthesia or Sedation Procedure of Deceased Patient



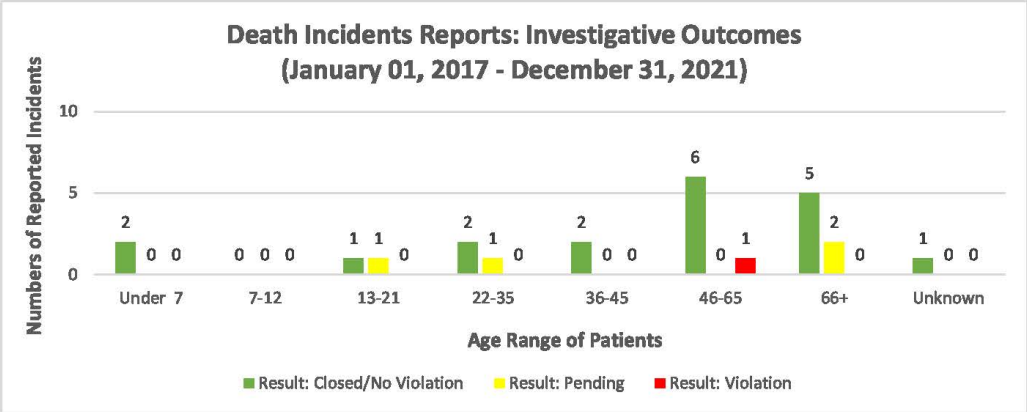
- This chart represents the category of the provider responsible for monitoring the patient who passed away possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises.
  - Of the 24 cases of reported deaths, two of the care providers were identified as general dentists.
  - Five of the care providers were identified as oral surgeons
  - Two of the care providers were identified as dentist anesthesiologists.
  - Four of the care providers were identified as physician anesthesiologists.
  - One care provider was identified as a registered dental assistant.
  - Ten of the care providers had either left this section blank incorrectly identified the category of the provider on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

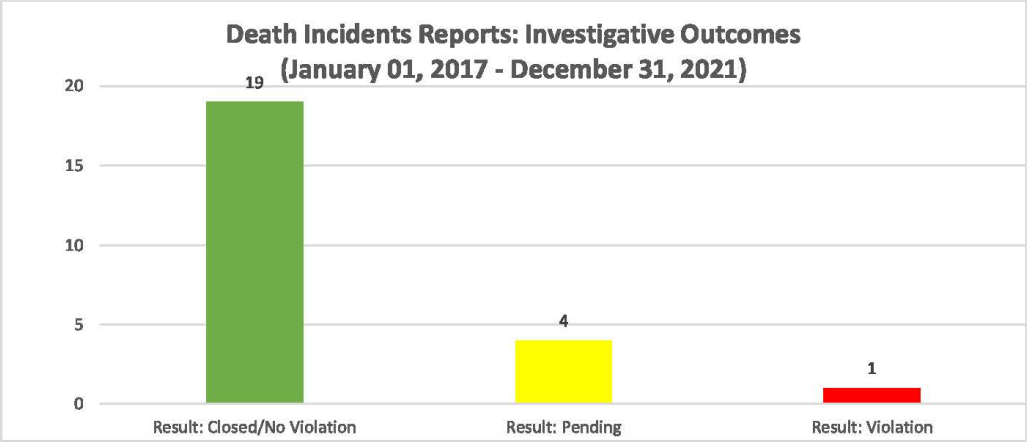
Planned Depth of Sedation of Deceased Patients



- This chart represents the planned depth of sedation for patients who had passed away possibly due to the administration of anesthesia and/or sedation under the dental provider's care or after they had left the premises. Please note that the planned depth of sedation is not a set category, and the information provided in the chart represents the provider's response on the "Courtesy Form for Reporting of Anesthesia Death or Hospitalization."

Death Incident Reports: Investigative Outcomes





- These two charts represent the Board's investigative outcomes from January 1, 2017, to December 31, 2021, for all reported deaths where anesthesia and/or sedation was administered.
- The Board has compiled and presents the following data:
  - For pediatric patients under 7 years of age, there were two incident reports of death, and both of those cases resulted in no violations.
  - For older pediatric patients ages 7-12, there were no reported cases of death.

- For adolescent patients ages 13-21, there were two incident reports of death. One case resulted in no violations, and the other is pending further investigation.
- For young adult patients ages 22-35, there were three incident reports of death. Two cases resulted in no violations, and one case is pending further investigation.
- For adult patients ages 36-45, there were a total of two incident reports of death, and both of those cases resulted in no violations.
- For middle-aged patients ages 46-65, there were seven incident reports of death. Of those seven, six cases resulted in no violations, and one case resulted in a violation.
- For senior patients ages 66 and up, there were a total of seven incident reports of death. Of those, five cases resulted in no violations, and two cases are pending further investigation.
- For patients of unknown age, there was one incident report of death, which resulted in no violation.

o Percentages of the case results are broken down as follows:

- 79.17% of cases were "Closed – No Violation"
- 16.67% of cases are in "Pending" status
- 4.16% of cases were "Violation"

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