OCCUPATIONAL ANALYSIS OF THE REGISTERED DENTAL ASSISTANT PROFESSION

CALIFORNIA DEPARTMENT OF CONSUMER AFFAIRS

DENTAL BOARD OF CALIFORNIA

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June 2023

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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

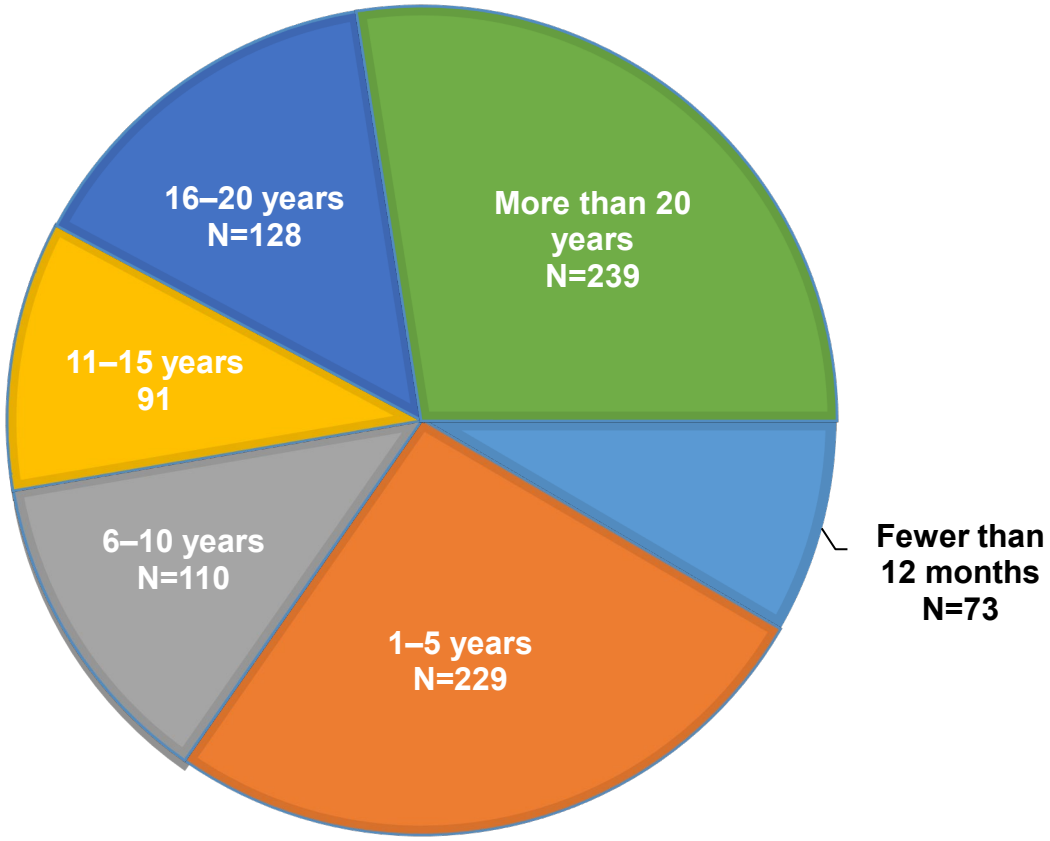


TABLE 2 – NUMBER OF YEARS WORKING AS A DENTAL ASSISTANT BEFORE OBTAINING RDA LICENSE

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

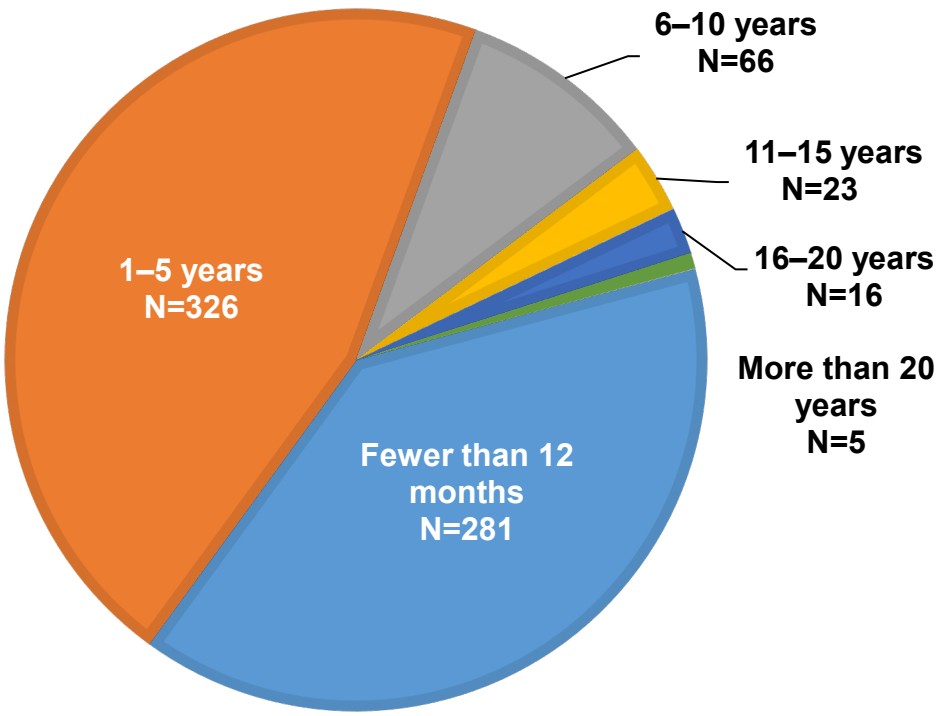
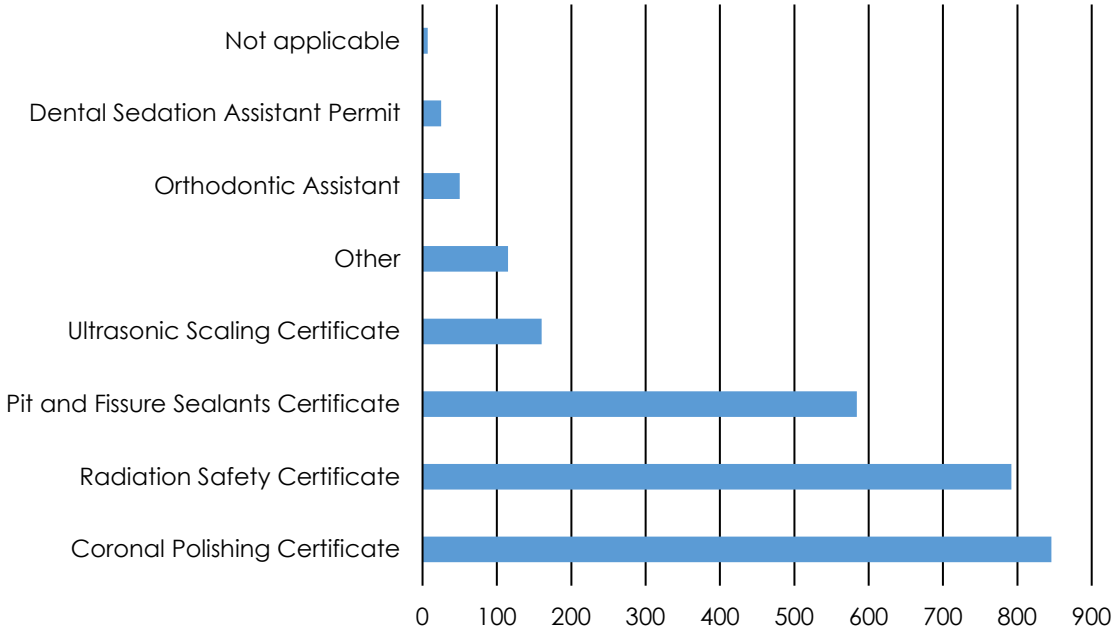


TABLE 3 – LICENSES AND CERTIFICATES HELD IN ADDITION TO RDA*

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

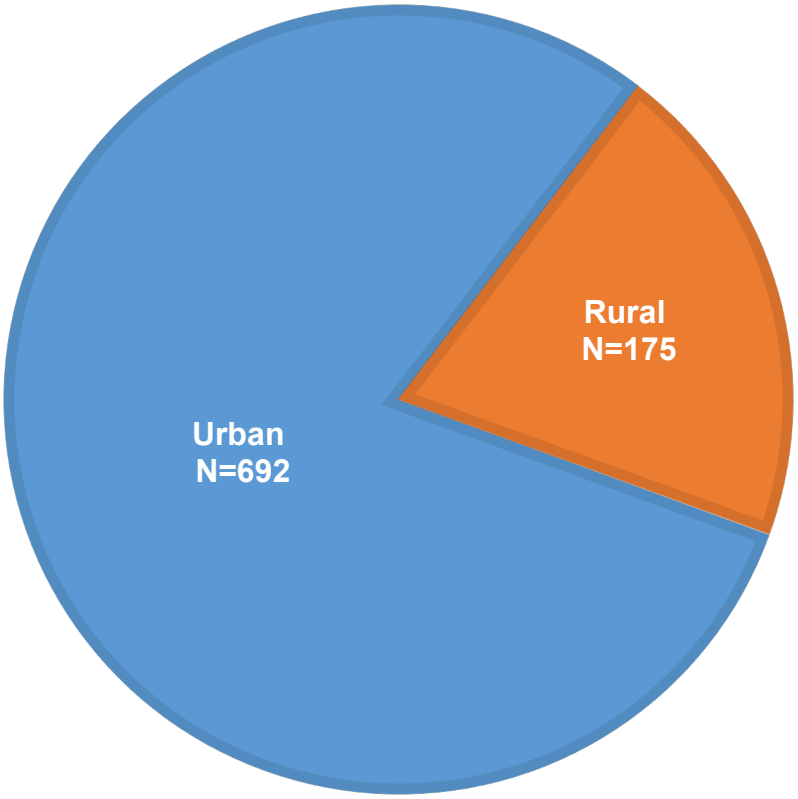


TABLE 5 – PRIMARY WORK SETTING DESCRIPTION

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

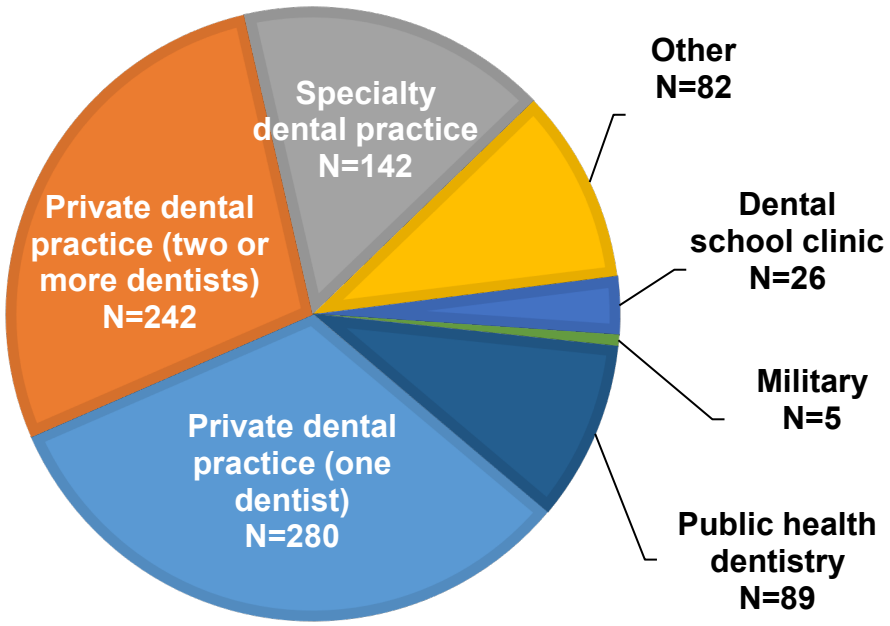


TABLE 6 – DENTAL PRACTICE DESCRIPTION

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

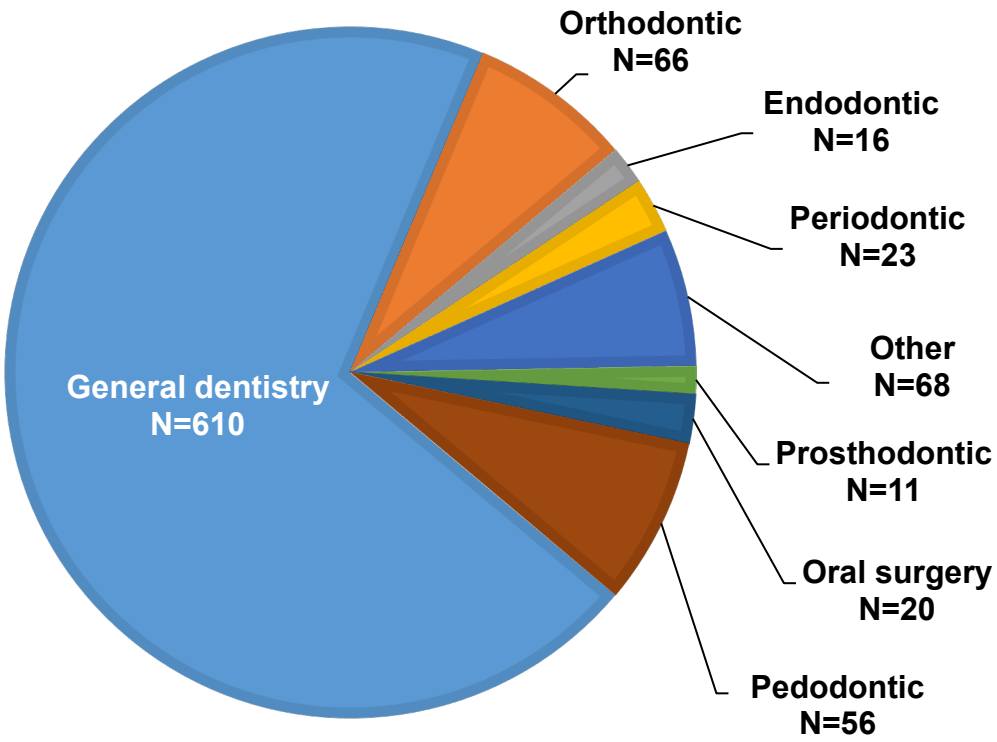


TABLE 7 – NUMBER OF LICENSED REGISTERED DENTAL ASSISTANTS IN PRIMARY WORK SETTING (NOT INCLUDING YOURSELF)

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)

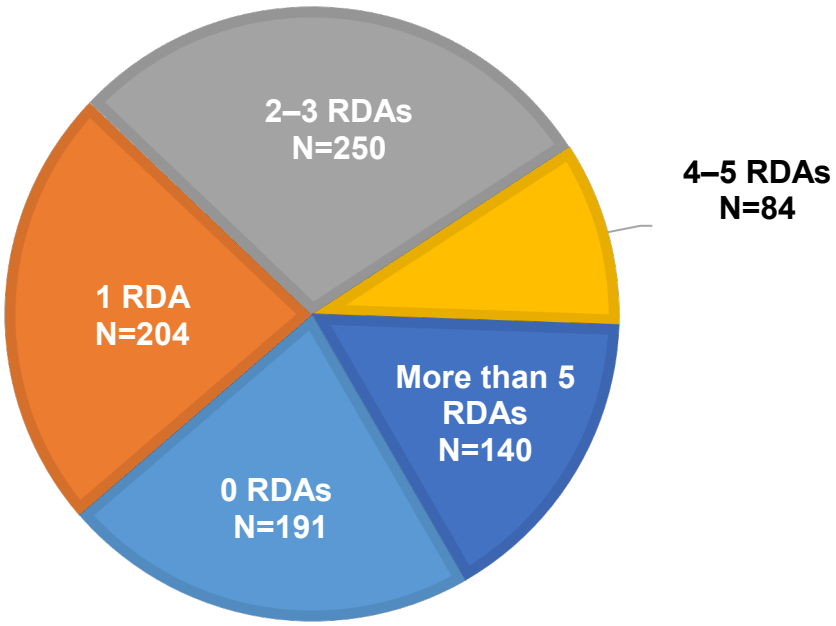


TABLE 8 – NUMBER OF LICENSED RDAEFs IN PRIMARY WORK SETTING

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

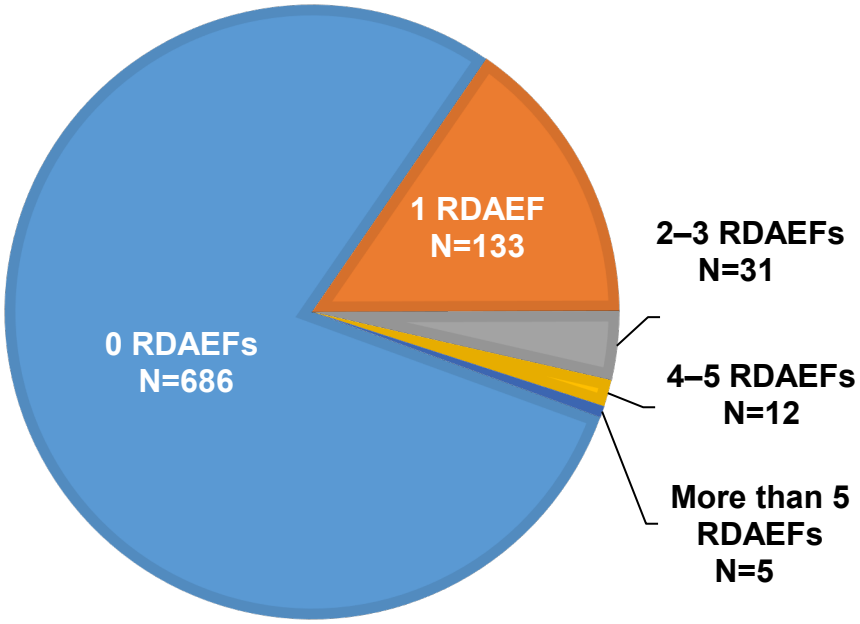


TABLE 9 – NUMBER OF UNLICENSED DENTAL ASSISTANTS IN PRIMARY WORK SETTING

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

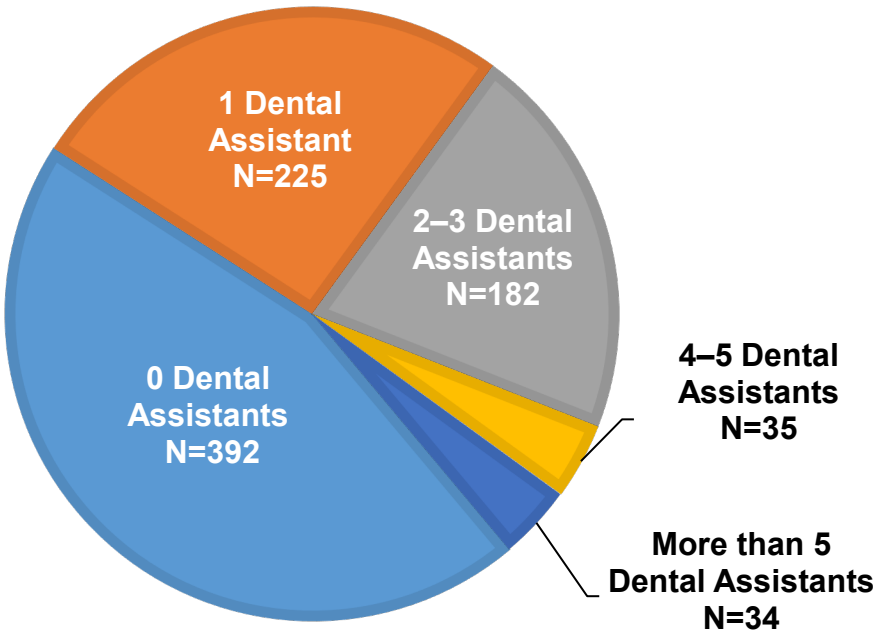


TABLE 10 – RESPONDENTS BY REGION

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

Please do not forward this email as its survey link is unique to you.
Privacy | Unsubscribe

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

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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

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

California Business and Professions Code § 139. (n.d.). State of California.

Department of Consumer Affairs. (2022). *Policy OPES 22-01 Licensure Examination Validation*. State of California.

Department of Consumer Affairs. (2020). *Policy OPES 20-01 Participation in Examination Development Workshops*. State of California.

Office of Professional Examination Services. (2018). *Occupational Analysis of theDentist Profession*. Department of Consumers Affairs. State of California.

Joint Commission on National Dental Examinations. (2021). *INBDE Technical Report*.

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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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

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

California Business and Professions Code § 139. (n.d.). State of California.

Department of Consumer Affairs. (2022). *Policy OPES 22-01 Licensure Examination Validation*. State of California.

Department of Consumer Affairs. (2020). *Policy OPES 20-01 Participation in Examination Development Workshops*. State of California.

Office of Professional Examination Services. (2018). *Occupational Analysis of the Dentist Profession*. Department of Consumers Affairs. State of California.

Joint Commission on National Dental examintions. (2021). *DLOSCE Technical Report*.

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*.

Department of Consumer Affairs (DCA). *Policy OPES 18-02 Licensure Examination Validation Policy*. State of California.

Popp, S. E. O. (October 2019). *WREB 2018 Dental examination technical report*. Western Regional Examining Board.

Popp, S. E. O. (September 2019). *WREB 2018 Practice analysis general dentist*. Western Regional Examining Board.

Western Regional Examining Board. (2018). *2018 Dental exam candidate guide*.

Western Regional Examining Board. (2018). *2018 Comprehensive treatment planning exam candidate guide*.