Update on the Dental Examinations of the JCNDE

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Director, JCNDE

October 3, 2024

Overview

- The Joint Commission on National Dental Examinations (JCNDE)
- The Department of Testing Services (DTS)
- Ongoing and upcoming strategic initiatives
- Validity, reliability, & high stakes licensure testing
- The Integrated National Board Dental Examination (INBDE)
- The Dental Licensure Objective Structured Clinical Examination (DLOSCE)
- Q & A

The Purpose of the JCNDE

- The JCNDE provides information to dental boards to inform licensure decisions concerning dental and dental hygiene candidates.
  - Dental boards have the critical task of using this information to understand whether a candidate has the skills necessary to safely practice.
  - The actions of dental boards are vital to the oral health and general health of the public.
- The JCNDE oversees the following licensure examination programs:
  - National Board Dental Hygiene Examination (NBDHE)
  - Integrated National Board Dental Examination (INBDE)
  - Dental Licensure Objective Structured Clinical Examination (DLOSCE)
  - Dental Hygiene Licensure Objective Structured Clinical Examination (DHLOSCE) (*in development*)

Joint Commission-ADA *Bylaws* Duties

a. Provide and conduct examinations for all purposes, including assisting state boards of dentistry and dental examiners in exercising their authority to determine qualifications of dentists and other oral health care professionals seeking certification and/or licensure to practice in any state or other jurisdiction of the United States.

b. Make rules and regulations for the conduct of examinations and the certification of successful candidates.

c. Serve as a resource for dentists and other oral health care professionals concerning the development of examinations.

d. Provide a means for a candidate to appeal an adverse decision of the Commission.

e. Submit an annual report to the House of Delegates of this Association and interim reports, on request.

f. Submit an annual budget to the Board of Trustees of the Association.

JCNDE Strategic Direction

Mission

Protecting public health through valid, reliable, and fair assessments of knowledge, skills, and abilities to inform decisions that help ensure safe and effective patient care by qualified oral healthcare team members.

Vision

The JCNDE is the leading resource for the valid, reliable and fair assessment of oral health professionals.

Composition of the JCNDE

Appointing Organizations	Number of Members	Term Lengths (in years)
Voting Members		
AADB	6	4
ADEA	3	4
ADA	3	4
ADHA	2	4
ASDA	1	1
Public	1	4
Non-voting Members		
ASDA Observer	1	1*
ADA BOT Liaison	1	1

*The ASDA Observer transitions to a Commissioner role in their second year.

Appointing Organizations and Current Appointees

AADB (6)	**Anthony E. Herro, DDS (JCNDE Chair)** Julie W. McKee, DMD Jeetendra Patel, DDS (Open Position) (Open Position) (Open Position)
ADA (3)	M. Reza Iranmanesh, DMD, MSD, PA Frank E. Schiano, DMD, FAGD, MScD Ronald Waryjas, DDS
ADEA (3)	Sara Gordon, DDS Rachel Hogan, DMD, M.Ed. Peter Loomer, B.Sc., DDS, Ph.D., MRCD(C), FACD **(JCNDE Vice-Chair)**
ADHA (2)	Han-Na Jang, RDH, MSDH Tami Grzesikowski, RDH, MEd
ASDA (1)	Chris Elkhal, DMD
Public (1)	James R. Sherrard, PhD
Liaisons & Observers	Tareina Rogers, MS (ASDA Observer) Allen Reavis, DDS (ADA Board Liaison) Liaisons and observers do not participate in voting

The JCNDE

Dr. Anthony E Herro
Chair

Dr. Peter M. Loomer
Vice-Chair

Dr. Christopher Elkhal
(ASDA Student Commissioner)

Dr. Sara Gordon

Tami Grzesikowski

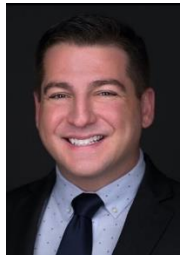
Dr. Rachel Hogan

Dr. M. Reza Iranmanesh

Ms. Han-Na Jang

Dr. Julie W. McKee

Dr. Jeetendra Patel



Dr. Frank Schiano

Dr. James R. Sherrard

Dr. Ronald J. Waryjas

Dr. Allen Reavis
(ADA BOT Liaison)

Tareina Rogers
(ASDA Observer)

Commissioners are dental and/or dental hygiene board members, educators, practitioners, students, and/or members of the public.

Key Points

- The composition of the JCNDE reflects the important perspectives that must be considered in the construction and implementation of dental and dental hygiene examinations, with particular emphasis given to boards.
- The JCNDE operates “at arms length” from the ADA and other appointing associations, pursuing its *Bylaws* duties.
- The JCNDE has a long track record of helping boards identify those who are not qualified to safely practice.
- The JCNDE monitors administrations through internal procedures and close collaboration with key vendors (Prometric and Pearson VUE)
- The JCNDE monitors examination and examinee performance closely and regularly, and reviews examination policy on an ongoing basis to address any issues that arise.
- The JCNDE updates examination content and programs to ensure clinical relevance and to help ensure consistent, accurate identification of those who do not possess the skills necessary to safely practice.

The Department of Testing Services (DTS)

DTS Development

Test Development	Dental Content and Media Development	Research & Development - Psychometrics	New Psychometric Development & Innovations
Conducts Test Construction Team (TCT) meetings for seven operational examination programs (80+ meetings annually) and new programs under development.	Develops, reviews, and manages dental content and media assets for examination programs (3D models, illustrations, radiographs, clinical photographs, clinical simulations, Patient Boxes).	Oversees analysis and scoring of examinations (45,000+), professional investigations, and technical publications in support of examination programs	Provides psychometric support in the development of new examination programs.

DTS Operations

Test Administration	Test Security and Fraud Prevention	Project Management and Operations	Communications	Volunteer and Meetings
Manages application processing, results report requests, and test vendor administrations (45,000+) Interacts with candidates, academic programs, administration and faculty via phone calls, live chats, emails, faxes (nearly 70,000 annually)	Monitors test security policies, procedures, irregularities and candidate appeals; risk assessment. Manages testing accommodation requests. Resolves testing day problems.	Project management and services to outside clients.	Manages communications for stakeholders and communities of interest.	Manages volunteer activities and meeting logistics for TCT and governance meetings.

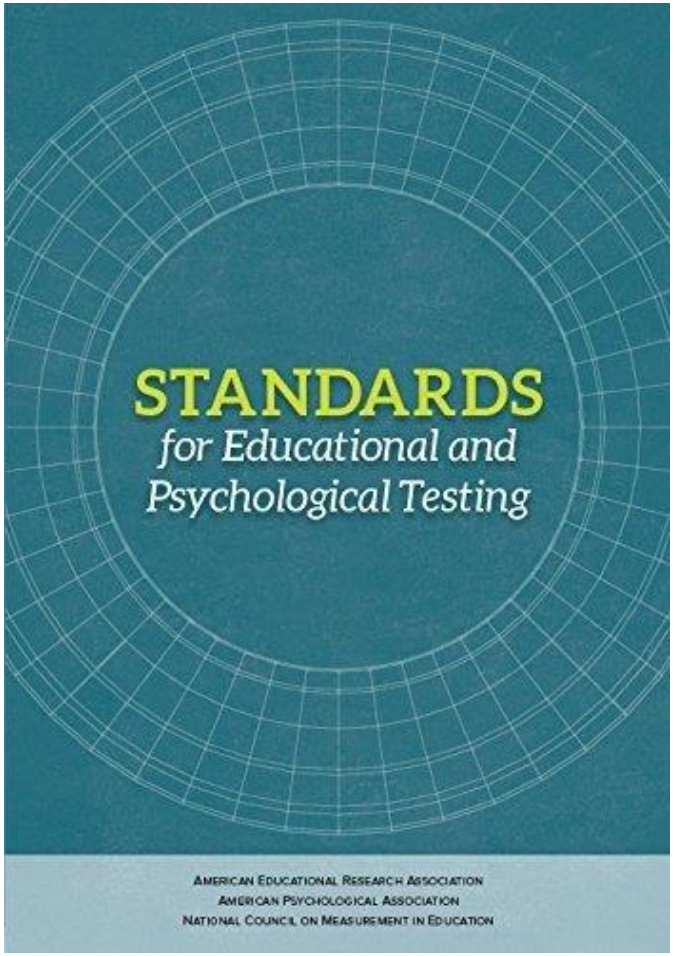
Governing Bodies and Testing Programs

DTS implements high-stakes licensure and admissions testing programs under the purview of the following governing bodies:

Joint Commission on National Dental Examinations (JCNDE)	Council on Dental Education and Licensure (CDEL)
• Integrated National Board Dental Examination (INBDE) • National Board Dental Hygiene Examination (NBDHE) • Dental Licensure Objective Structured Clinical Examination (DLOSCE) • Dental Hygiene Licensure Objective Structured Clinical Examination (DHLOSCE)(*in development*)	• Dental Admission Test (DAT) • Advanced Dental Admission Test (ADAT) • Admission Test for Dental Hygiene (ATDH)
Outside Clients	
• Optometry Admission Test (OAT) • Canadian Dental Aptitude Test (CDAT) • Additional clients	

Professional Standards

- The *Standards* were developed by the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME).
- The *Standards* and industry best practices guide the design, construction, scoring, and reporting of examinations implemented by the Department of Testing Services (DTS).
- The *Standards* provide considerations for developing and implementing valid, reliable, and fair examinations.



Ongoing and Upcoming Strategic Initiatives

DLOSCE and DHLOSCE

- The DLOSCE and DHLOSCE are now board-approved options in fulfillment of clinical dental and dental hygiene licensure requirements (respectively) in the following additional states:

Arizona

Kentucky

- The JCNDE appreciates the opportunity to serve boards in service to the public health.

Ongoing and Upcoming Strategic Initiatives

The JCNDE reports major decisions on its website: jcnde.ada.org/

JCNDE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS

Unofficial Report of Major Actions

Psychometric Research & Examination Content Development Meeting of the Joint Commission on National Dental Examinations

May 17, 2024

The Joint Commission on National Dental Examinations (JCNDE) met on Friday, May 17, 2024 for its annual Psychometric Research & Examination Content Development meeting and took the following actions:

1. Established a new performance standard for the INBDE, with implementation of the new standard to occur as soon as logistically feasible. The new performance standard was identified through a structured and rigorous process involving a standard setting review panel composed of a diverse and representative group of subject matter experts who thoroughly scrutinizing INBDE content to identify the level of performance required for safe practice.

   The INBDE is a valid, reliable, and fair examination that is used to help inform licensure decisions that help protect the safety of the public. Candidates are encouraged to be well-prepared before attempting this rigorous examination.

2. Further strengthened the JCNDE's National Board Examinations from a fairness perspective, by formally adopting the Fairness and Sensitivity Review process that was successfully piloted in 2023. This process involves convening a separate group of Fairness and Sensitivity Reviewers to review examination content specifically from a fairness perspective. This is in addition to efforts test constructors already take to help ensure the fairness of National Board Examination

JCNDE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS

Unofficial Report of Major Actions

Joint Commission on National Dental Examinations Governance, Policies, & Administration (GPA) Meeting June 26, 2024

The Joint Commission on National Dental Examinations (JCNDE) met on Wednesday, June 26, 2024 for its annual Governance, Policies, & Administration (GPA) Meeting and took the following actions:

1. Announced the acceptance of the Dental Licensure Objective Structured Clinical Examination (DLOSCE) and Dental Hygiene Licensure Objective Structured Clinical Examination (DHLOSCE) as board-approved options in fulfillment of clinical dental and dental hygiene licensure requirements (respectively) in the following additional states:
   - Arizona
   - Kentucky

   The JCNDE appreciates the opportunity to serve boards in service to the public health.

2. Adopted examination program policies for the DHLOSCE, which will be launched in March of 2025 in time for the 2025 dental hygiene licensure cycle. The DHLOSCE Candidate Guide will be published online during the third quarter of 2024.

3. Reaffirmed the JCNDE's long-term commitment to the DLOSCE and DHLOSCE through adoption of resolutions to help the JCNDE better promote these examinations and support advocacy efforts. The JCNDE's OSCEs are cutting edge examinations that are consistent with the JCNDE's *Mission* to help protect the public health through valid, reliable and fair assessments of knowledge, skills, and abilities to inform decisions that

Strategic Initiatives and Roadmap

- Implementation of an **updated INBDE performance standard** (June 2024)
- Development and implementation of an **updated, comprehensive practice analysis** for dentistry [2025]
- Updates to dental examination **test specifications** (i.e., percentages of items assigned to topic areas), based on the aforementioned practice analysis:
  - INBDE Test Specification Review Panel [2026]
  - DLOSCE Test Specification Review Panel [2026]
  - JCNDE review of updated INBDE and DLOSCE test specifications [2026]
- Review and update of **INBDE and DLOSCE performance standards** (as appropriate), based on updates to INBDE and DLOSCE test specifications [2027]
- **Milestone:** INBDE and DLOSCE updated test specifications and updated performance standards fully implemented [2028]
- Designing and implementing a framework for **multi-stage adaptive testing** [2025, with implementation date TBD].

Additional Updates and Initiatives

- The JCNDE reaffirmed its long-term commitment to the DLOSCE and DHLOSCE.
- The JCNDE further strengthened its National Board Examinations from a fairness perspective by incorporating an additional Fairness and Sensitivity Review process that was successfully piloted in 2023.
- The above is in addition to efforts test constructors already take to help ensure the fairness of National Board Examination content.
- Appointed new JCNDE Test Constructors and reappointed currently serving Test Constructors in support of the examination programs of the JCNDE.
- The JCNDE expresses its heartfelt thanks to Test Constructors for their exceptional work.
  - Interested in contributing to the National Board Examinations? Consider becoming a JCNDE Test Constructor! Learn more at https://www.ada.org/education/testing/volunteer-test-constructor

Additional Resources

The JCNDE makes numerous resources available to communities of interest through its website: jcnde.ada.org

- Candidate Guides
- Technical Reports
- Sample Questions
- Sample 3D model (DLOSCE)
- Unofficial Reports of Major Actions
- Recorded Webinars
- List of recent and forthcoming updates to examinations

Joint Commission-ADA *Bylaws* Duties

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Validity, Reliability, & High Stakes Examinations

Core Concepts from a Validity Perspective

- Tests are constructed for a specific, well-defined purpose:
  - Does the individual possess the level of skills necessary for safe practice? (Licensure)
  - To what degree does the individual possess the pre-requisite level of knowledge, skills, abilities, and other characteristics required to succeed in an educational program? (Admissions)
- Test results are interpreted in light of the test's purpose.
- Validity focuses on the available evidence to support the use of a test for its intended purpose.
- The accumulated evidence is referred to as the validity argument.

Core Concepts from a Reliability Perspective

- Reliability generally refers to the consistency, stability, and precision of test scores.
- There are many different ways to think about reliability and agreement.
  - If the candidate were to test on the same form again, would they perform similarly?
  - If the candidate's performance is categorized (e.g., pass/fail), what is the likelihood of obtaining the same result?
  - If the candidate were to test on a different test form, would they get the same result?
  - If one were to split the test in half (for example), would the different halves yield the same result?
  - To what degree do the ratings from different subject matter experts correspond and agree?
  - How precise are test scores? How much error is present?
- Reliability is impacted by factors such as the number of questions or ratings, the quality of those questions and/or ratings, how calibrated those raters are with regard to a scoring rubric, etc.

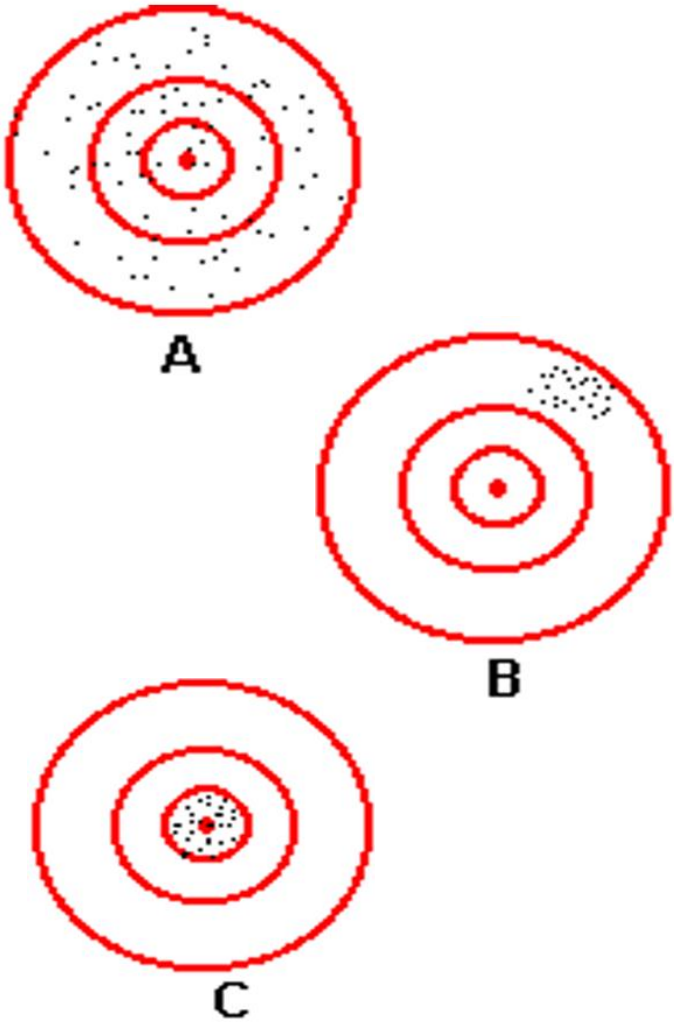
Validity, Reliability, and Fairness

- Consistent and stable measurement must be present for a test to be useful in achieving its intended purpose.
- In short, tests must be reliable in order for them to be valid.
- Reliability sets the upper limit for validity.*
- Reliability is not the endgame. In some situations a test publisher might choose to make sacrifices in reliability, to increase validity!
- Fairness is also critical to validity. If a test is not fair, it weakens the validity argument.
  - Note: Bias can actually increase reliability. This is obviously undesirable.
- For maximum validity, tests should avoid measuring things that are unrelated to candidate skills in the targeted area.

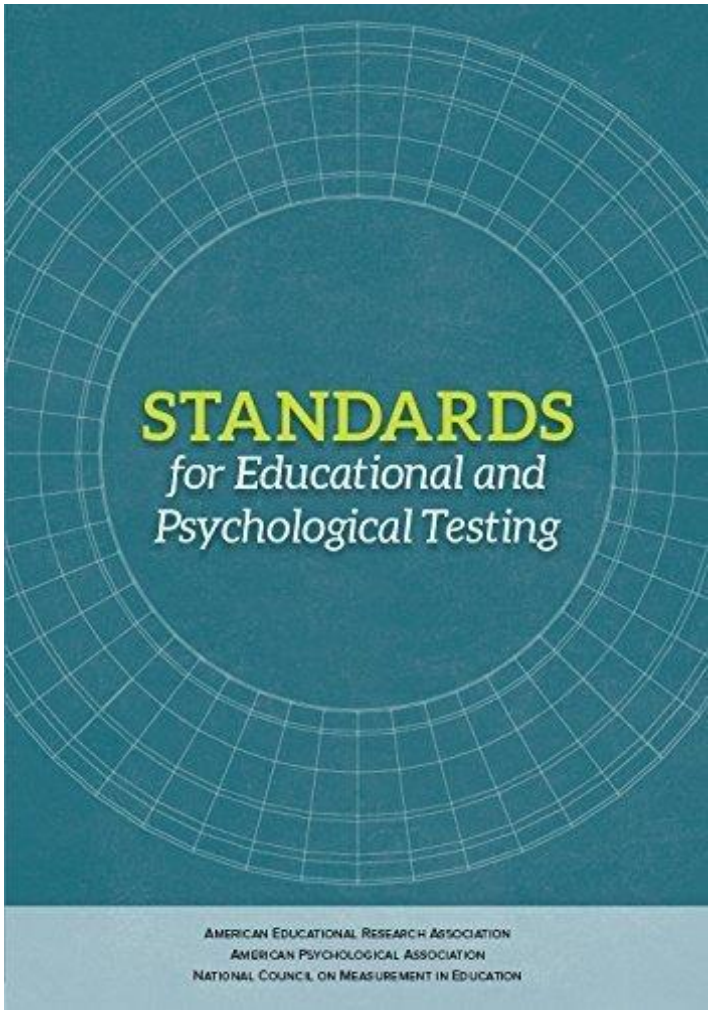
* Technically, the square root of reliability sets the upper limit for validity.

Validity, Reliability, and Bias

- Target A: No reliability, no validity
- Target B: Bias. High reliability does not equal high validity
- We want unbiased tests with both high reliability and strong validity



Professional Standards



Publicly available: https://www.testingstandards.net/open-access-files.html

What types of Validity evidence are relevant?

- The *Standards* note the following forms of validity evidence:
  - **Content-oriented evidence**
  - Cognitive processes
  - Internal test structure
  - **Relationships with conceptually related constructs**
  - **Relationships with criteria**
  - Consequences of tests

Note: **Face validity** does **not** appear on this list.
Note: **Examination failures rates** in isolation are not a form of validity evidence.

With regard to **relationships**, we look at magnitude and direction.

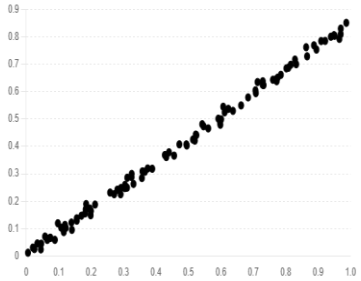
- Measures of the same thing should be highly related (convergent validity)
  - *Test scores involving two different tests of reading comprehension.*

- Performance on a task that requires the skill measured by the test (criterion-related validity). Task performance and test performance should be highly related.
  - *Performance on a dental skills test and performance in professional dentistry or performance in dental school.*

How is relationship-based evidence interpreted?

1. As one variable increases, the other increases (**positive** relationship)

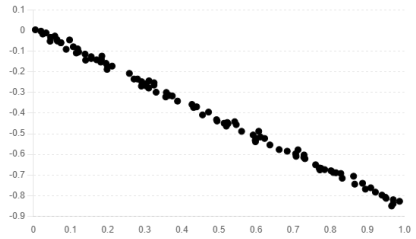
School performance



Test performance

2. As one variable decreases, the other decreases (**negative** relationship)

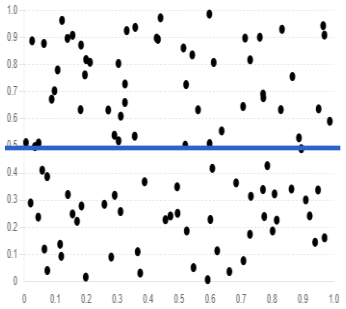
School performance



Test performance

3. Changes in one variable are **unrelated** to changes in another variable (coin flip)

School performance



Test performance

Interpreting Correlations	
.00	Zero (coin flip)
1.0	Perfect positive
-1.0	Perfect negative
General Guidelines*	
.10	Small
.30	Medium
.50	Large

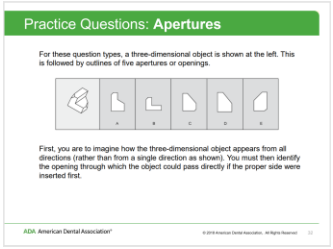
Cohen, 1988

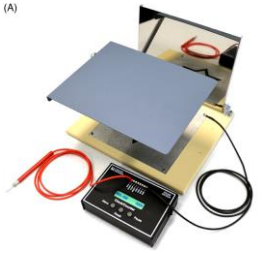
A Recent Published Example

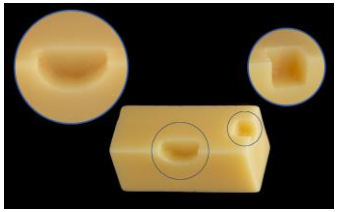
- Imbery et al. (2023) studied the relationship between 1st year preclinical dental laboratory courses (restorative dentistry and dental anatomy) and performance on the following:
  - The Perceptual Ability Test (PAT) (a subtest of the DAT)
  - Mirror tracing test (measure of hand-eye coordination where direct vision is obscured)
  - The Operation game
  - Wax carving exercise

	Dental anatomy	Restorative dentistry
PAT	**0.41**	0.18
Mirror tracing		
Less time	**0.25**	**0.31**
Less errors	0.12	**0.31**
Operation game		
Less time	**0.21**	**0.34**
Less errors	0.10	**0.31**
Wax carving	**0.34**	**0.49**

Note: Values in bold are statistically significantly different from 0 at the 0.05 confidence level.







Imbery, T. A., Malone, C. J., Alhaddad, A. S., Goolsby, S. R., Janus, C., Baechle, M. A., & Carrico, C. K. (2023). Investigating correlations between the PAT and three hand-skill exercises to performance in preclinical laboratory courses. Journal of dental education, 87(7), 1008-1015. https://doi.org/10.1002/jdd.13202

The Integrated National Board Dental Examination

(INBDE)

JCNDE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS

What is the purpose and intended use of the INBDE?

- The INBDE is designed to answer the following question:

  Does the candidate possess the level of knowledge and cognitive skills required to safely practice dentistry?

- The INBDE is used by dental boards to understand the qualifications of individuals who seek licensure to practice dentistry in the U.S.
- The INBDE has completely replaced the NBDE Parts I and II (as of December 31, 2022).
- The INBDE is designed to better protect the public through a clinically relevant, summative cognitive assessment that integrates the biomedical and clinical sciences.

What content is assessed by the INBDE?

- The Joint Commission has established 56 clinical content areas that represent the tasks entry-level general dentists must be able to perform to practice safely. These content areas are classified into three sections:
    1) Diagnosis and Treatment Planning
    2) Oral Health Management
    3) Practice and Profession
- The JCNDE also adapted ten Foundation Knowledge Areas from medicine, to represent the knowledge, skills, and abilities necessary to perform the aforementioned tasks.
- The tasks and foundation knowledge areas together form the Domain of Dentistry.
- The JCNDE conducted a practice analysis involving the Domain of Dentistry, to formally inform the content areas to be assessed on the INBDE, and the number of test questions to assign to each area.

56 Clinical Content Areas

#	Diagnosis and Treatment Planning
1	Interpret patient information and medical data to assess and manage patients.
2	Identify the chief complaint and understand the contributing factors.
3	Perform head and neck and intraoral examinations, interpreting and evaluating the clinical findings.
4	Use clinical and epidemiological data to diagnose and establish a prognosis for dental abnormalities and pathology.
5	Recognize the normal range of clinical findings and distinguish significant deviations that require monitoring, treatment, or management.
6	Predict the most likely diagnostic result given available patient information.
7	Interpret diagnostic results to inform understanding of the patient's condition.
8	Recognize the manifestations of systemic disease and how the disease and its management may affect the delivery of dental care.
9	Recognize the interrelationship between oral health and systemic disease, and implement strategies for improving overall health.
10	Select the diagnostic tools most likely to establish or confirm the diagnosis.
11	Collect information from diverse sources (patient, guardian, patient records, allied staff, and other healthcare professionals) to make informed decisions.
12	Formulate a comprehensive diagnosis and treatment plan for patient management.
13	Discuss etiologies, treatment alternatives, and prognoses with patients so they are educated and can make informed decisions concerning the management of their care.
14	Understand how patient attributes (e.g., gender, age, race, ethnicity, and special needs), social background and values influence the provision of oral health care at all stages of life.
15	Interact and communicate with patients using psychological, social, and behavioral principles.

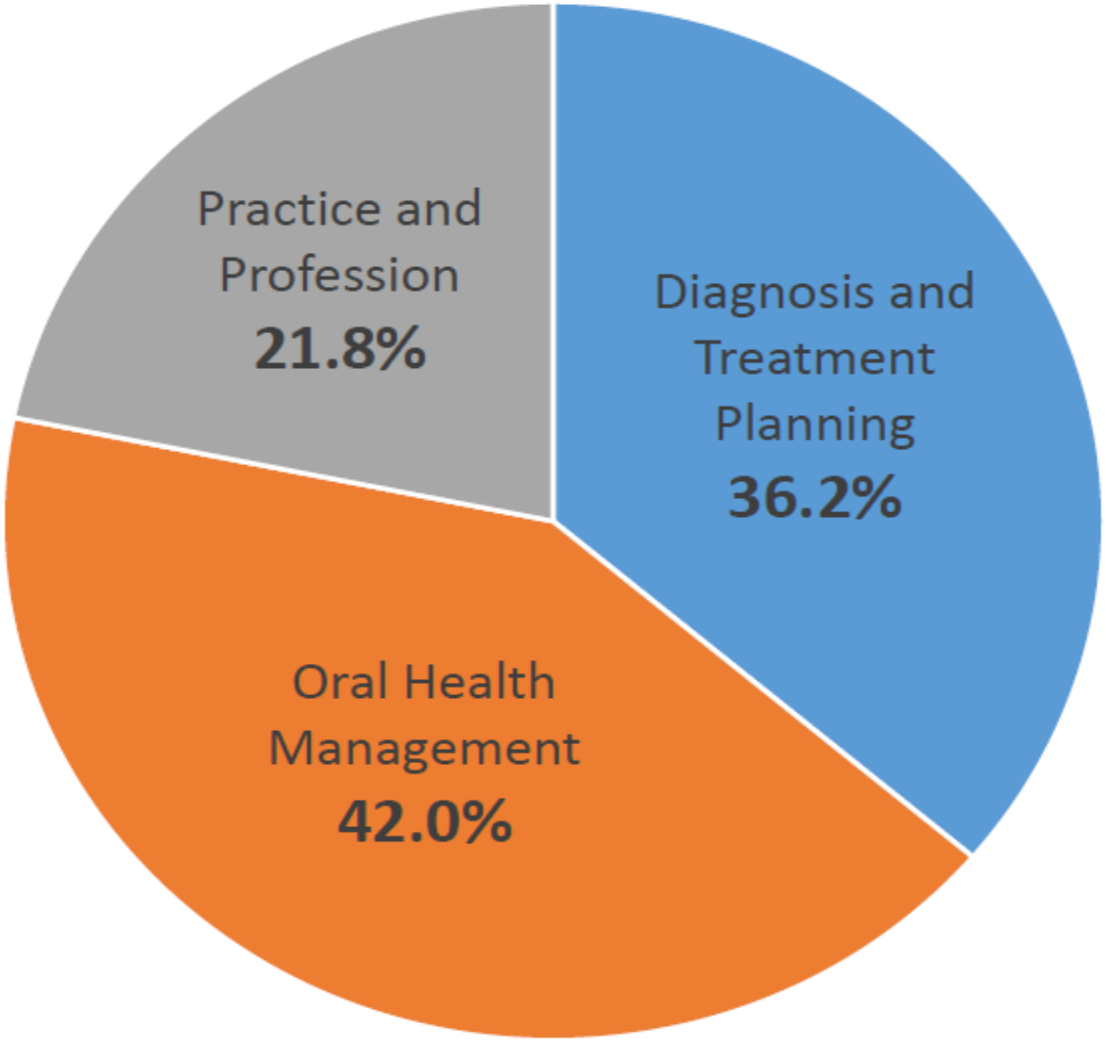
56 Clinical Content Areas

#	Oral Health Management
16	Prevent, recognize and manage medical emergencies (e.g., cardiac arrest).
17	Prevent, recognize and manage dental emergencies.
18	Recognize and manage acute pain, hemorrhage, trauma, and infection of the orofacial complex.
19	Prevent, diagnose and manage pain during treatment.
20	Prevent, diagnose and manage pulpal and periradicular diseases.
21	Prevent, diagnose and manage caries.
22	Prevent, diagnose and manage periodontal diseases.
23	Prevent, diagnose and manage oral mucosal and osseous diseases.
24	Recognize, manage and report patient abuse and neglect.
25	Recognize and manage substance abuse.
26	Select and administer or prescribe pharmacological agents in the treatment of dental patients.
27	Anticipate, prevent, and manage complications arising from the use of therapeutic and pharmacological agents in patient care.
28	Diagnose endodontic conditions and perform endodontic procedures.
29	Diagnose and manage the restorative needs of edentulous and partially edentulous patients.
30	Restore tooth function, structure, and esthetics by replacing missing and defective tooth structure, while promoting soft and hard tissue health.
31	Perform prosthetic restorations (fixed or removable) and implant procedures for edentulous and partially edentulous patients.
32	Diagnose and manage oral surgical treatment needs.
33	Perform oral surgical procedures.
34	Prevent, diagnose and manage developmental or acquired occlusal problems.
35	Prevent, diagnose and manage temporomandibular disorders.
36	Diagnose and manage patients requiring modification of oral tissues to optimize form, function and esthetics.
37	Evaluate outcomes of comprehensive dental care.
38	Manage the oral esthetic needs of patients.

56 Clinical Content Areas

#	Practice and Profession
39	Evaluate and integrate emerging trends in health care.
40	Evaluate social and economic trends and adapt to accommodate their impact on oral health care.
41	Evaluate scientific literature and integrate new knowledge and best research outcomes with patient values and other sources of information to make decisions about treatment.
42	Practice within the general dentist's scope of competence and consult with or refer to professional colleagues when indicated.
43	Evaluate and utilize available and emerging resources (e.g., laboratory and clinical resources, information technology) to facilitate patient care, practice management, and professional development.
44	Conduct practice activities in a manner that manages risk and is consistent with jurisprudence and ethical requirements in dentistry and healthcare.
45	Recognize and respond to situations involving ethical and jurisprudence considerations.
46	Maintain patient records in accordance with jurisprudence and ethical requirements.
47	Conduct practice related business activities and financial operations in accordance with sound business practices and jurisprudence (e.g., OSHA and HIPAA).
48	Develop a catastrophe preparedness plan for the dental practice.
49	Manage, coordinate and supervise the activity of allied dental health personnel.
50	Assess one's personal level of skills and knowledge relative to dental practice.
51	Adhere to standard precautions for infection control for all clinical procedures.
52	Use prevention, intervention, and patient education strategies to maximize oral health.
53	Collaborate with dental team members and other health care professionals to promote health and manage disease in communities.
54	Evaluate and implement systems of oral health care management and delivery that will address the needs of patient populations served.
55	Apply quality assurance, assessment and improvement concepts to improve outcomes.
56	Communicate case design to laboratory technicians and evaluate the resultant restoration or prosthesis.

Allocation of Test Questions: Clinical Content Areas



Allocation of Test Questions: Foundation Knowledge Areas

#	Foundation Knowledge Area	Percent
1	Molecular, biochemical, cellular, and systems-level development, structure and function	12.2%
2	Physics and chemistry to explain normal biology and pathobiology	6.8%
3	Physics and chemistry to explain the characteristics and use of technologies and materials	8.0%
4	Principles of genetic, congenital and developmental diseases and conditions and their clinical features to understand patient risk	10.6%
5	Cellular and molecular bases of immune and non-immune host defense mechanisms	9.0%
6	General and disease-specific pathology to assess patient risk	11.8%
7	Biology of microorganisms in physiology and pathology	10.6%
8	Pharmacology	10.6%
9	Sociology, psychology, ethics and other behavioral sciences	10.6%
10	Research methodology and analysis, and informatics tools	9.8%

INBDE Resources – Foundation Knowledge Areas

Foundation Knowledge Area One (FK1)

Molecular, Biochemical, Cellular, and Systems-Level Development, Structure, and Function

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.

Examples of Relevant Disciplines: Gross and Head and Neck Anatomy, Regional Anatomy, Dental Anatomy, Gnathology, Occlusion (including TMJ), General and Oral Histology, Embryology, Physiology, Cell Biology, Biochemistry, Molecular Biology, Genetics, Neuroscience, Nutrition, Oral Biology, General and Systemic Pathology, Cancer Biology, etc.

Examples of Relevant Clinical Science areas: Periodontology, Oral and Maxillofacial Surgery, Occlusion, TMD, Ergonomics, Prosthodontics, Pediatric Dentistry, Orthodontics, Implant Dentistry, Forensic Dentistry, Oral Medicine, Oral Pathology, Clinical Nutrition, etc.

1.1 Structure and function of the normal cell and basic types of tissues comprising the human body.

Relevant Disciplines: Gross and Head and Neck Anatomy, General and Oral Histology, Dental Anatomy, Occlusion, TMJ, etc.

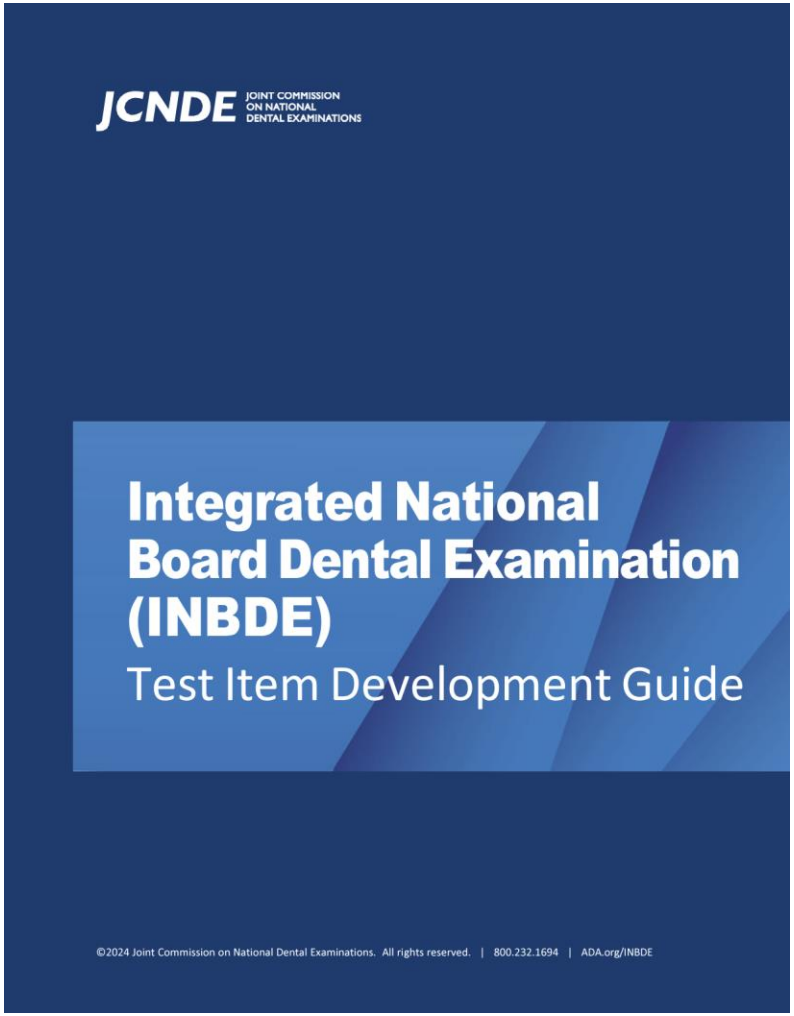
Examples:

- structure of the human body in general and the craniofacial region in particular
- structure and function of salivary glands, including the production, secretion, content and the function of saliva
- development and structure of the deciduous and permanent teeth
- development and structure of periodontal tissues
- development, structure and function of the major muscles of mastication and facial expression
- development, structure and function of the temporomandibular joint and its

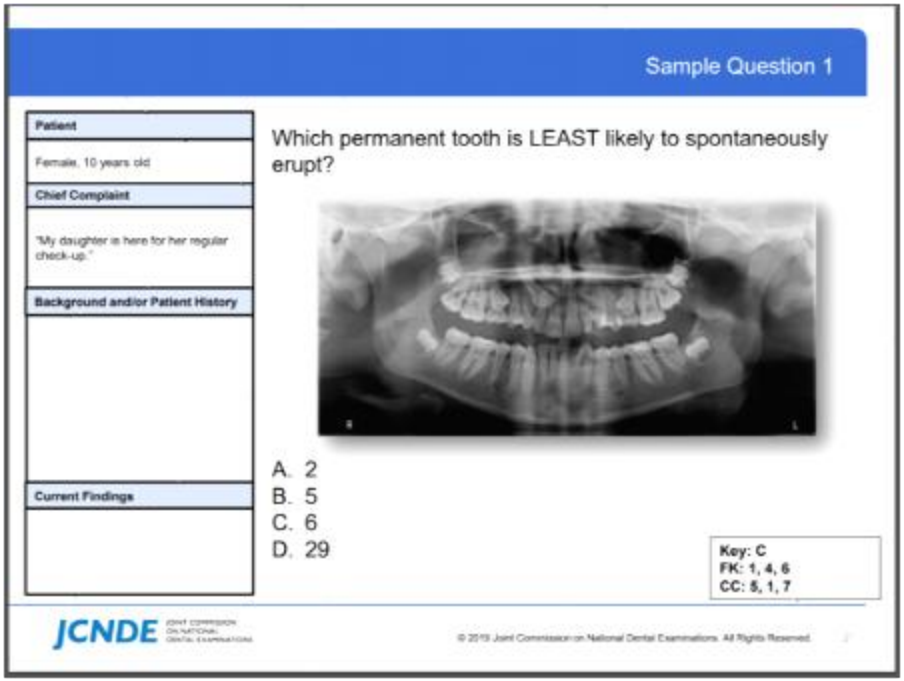
https://jcnde.ada.org/inbde/inbde-prepare

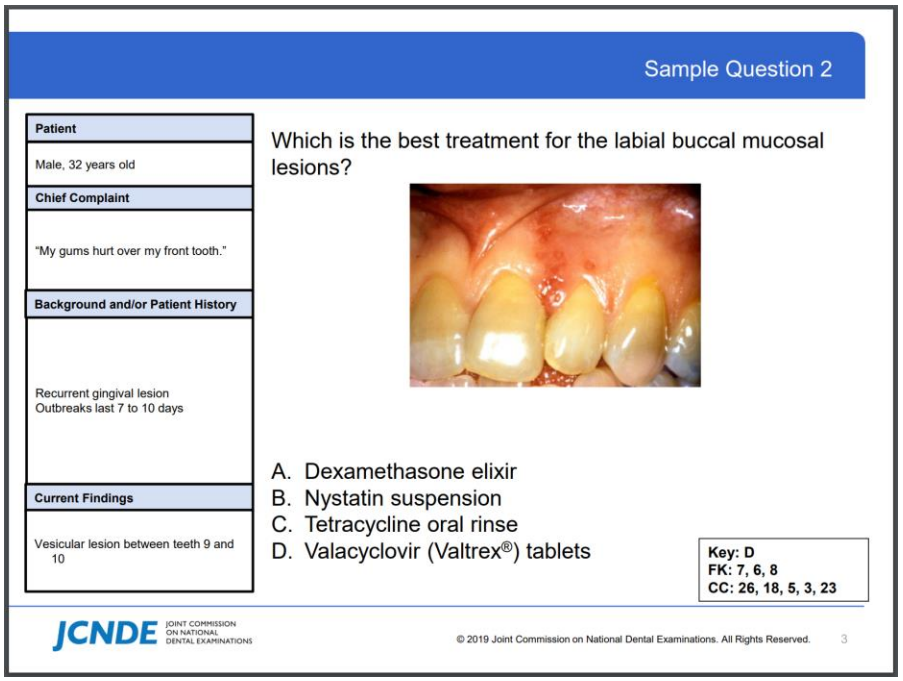
How are INBDE questions written?

- The INBDE item development guide was drafted to facilitate item development.
- This guide is available online (ada.org/inbde).
- INBDE questions are written by subject matter experts working in Test Construction Teams (TCTs).
- TCTs are asked to write clinically relevant, integrated items that provide insight as to whether a candidate has the cognitive skills necessary to safely practice entry-level dentistry.
- The INBDE utilizes an item presentation format known as the Patient Box.



INBDE Sample Questions





- The Patient Box provides a concise presentation of patient information, focusing measurement on the concepts to be tested.
- The JCNDE has provided 43 sample questions written by JCNDE Test Construction Teams for communities of interest: jcnde.ada.org/inbde/inbde-prepare
- These questions were provided to help familiarize candidates with how INBDE questions are presented and formatted.

Guiding Principles in INBDE item development

- The Just Qualified Candidate (JQC) is a hypothetical examinee who possesses the minimally acceptable level of knowledge and cognitive skills required for the safe, independent practice of entry-level general dentistry.
- The INBDE is intended to differentiate the JQC from those who fall below that referenced skill level.
  - The INBDE is NOT intended to differentiate stellar students from average students.
  - Items should reflect clinically relevant situations that a practicing dentist would encounter.
  - Items should avoid focusing on trivia and esoteric bits of knowledge.

INBDE Core Facts

- The INBDE contains 500 questions and requires 1½ days to administer.
- Administrations occur at Prometric professional testing centers located throughout the US and Canada.
- The 2024 INBDE fee is $845.
  - This fee includes official results reporting to the candidate, three licensing jurisdictions (provided result report requests are requested at the time of application), and the candidate's dental program (if CODA accredited).
- Examination regulations are strictly enforced, with corresponding penalties for rule violations (e.g., mandatory wait periods).
- Irregularity handling and appeal procedures are described in the INBDE candidate guide, and mirror those present for other examinations of the JCNDE.

INBDE Administration Schedule

INTEGRATED NATIONAL BOARD DENTAL EXAMINATION SCHEDULE		
DAY 1		
Section	**Content**	**Minutes**
Tutorial (optional)		15
Section 1	100 standalone items	105
Scheduled Break 1 (optional)		15
Section 2	100 standalone items	105
Scheduled Break 2 (optional)		30
Section 3	100 standalone items	105
Scheduled Break 3 (optional)		15
Section 4	60 items (item sets)	105
DAY 1 TOTAL TIME		8 hours 15 minutes
DAY 2		
Section	**Content**	**Minutes**
Tutorial (optional)		15
Section 5	70 items (item sets)	105
Scheduled Break 4 (optional)		15
Section 6	70 items (item sets)	105
Post-Exam Survey		15
DAY 2 TOTAL TIME		4 hours 15 minutes
TOTAL TIME		**12 hours 30 minutes**

INBDE Retest Policy

- Candidates who have failed to successfully complete the NBDE Part I or Part II must successfully test on the INBDE to obtain National Board certification. The NBDE Part I and Part II have been sunset and are no longer available for administration.
- INBDE attempts are independent of NBDE attempts with respect to the Five Years/Five Attempts Eligibility Rule (i.e., candidates will also have five years/five attempts on the INBDE).
- Subsequent to the fifth year or fifth attempt, failing candidates may test once every 12 months after their most recent attempt.
- As of January 1, 2022, candidates must wait a minimum of **60 days** between unsuccessful test attempts. A maximum of four (4) candidate administrations are permitted in a 12-month period within any given National Board Examination program. This policy cannot be appealed.
- In providing INBDE results, all attempts on the National Board Dental Examinations (i.e., NBDE Part I, NBDE Part II, and the INBDE) are reported.

INBDE Results Reporting

- **Candidate Results:** INBDE results are reported as Pass/Fail
  - Candidates who pass simply receive notification they have passed.
  - For remediation purposes, candidates who fail are provided with information concerning their overall performance, and their performance in the following areas:
    - Foundation Knowledge Areas (10)
    - Clinical Content Sections (3)
- **School Results:** Candidate pass/fail status, monthly reports, and annual reports are all reported to dental schools through the DTS Hub.
  - Monthly and annual reports describe how a school performed on the INBDE relative to other schools.
- **State Board Results.** Candidate pass/fail status is reported to dental boards through the DTS Hub.
  - The DTS Hub indicates whether a candidate has met or not met the National Board Dental Examination cognitive skills requirements for dentistry

INBDE Psychometric Characteristics (2023)

INBDE results are highly reliable:

Coefficient alpha reliability ranged from .88 to .90 across examination forms.

Classification Accuracy was .99 for all examination forms

- Represents the probability that a candidate's pass/fail result on the examination reflects the decision that would be made had their true skill level been known.

Classification Consistency was .98 for all examination forms

- Represents the probability that a candidate would receive the same pass/fail result on two hypothetical, successive administrations of the examination.

Convergent Validity Evidence: Relationship between INBDE and NBDE

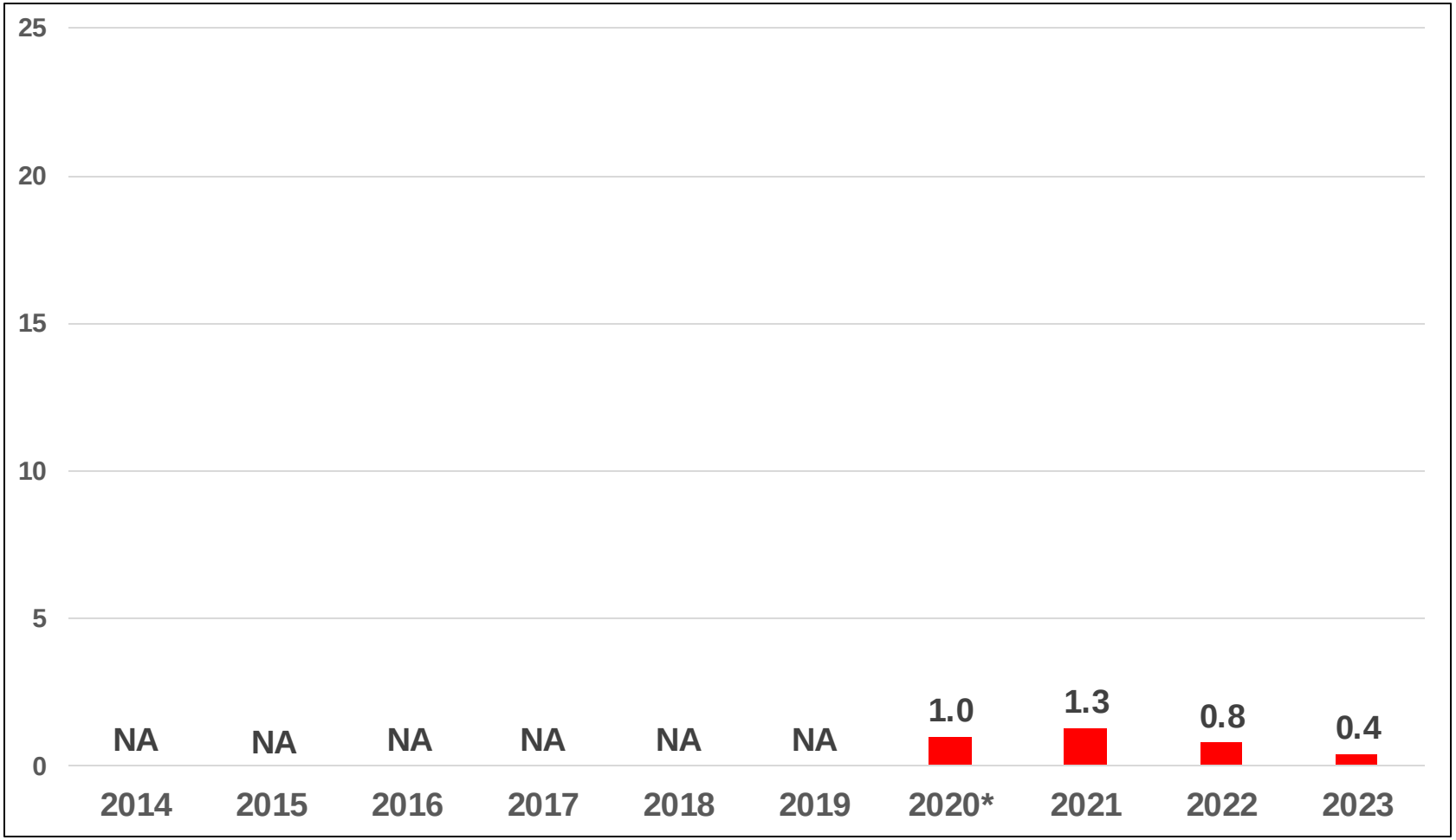
Candidate performance on the 2017-2018 INBDE Field Test was positively correlated with performance on NBDE Parts I and II

Correlation Between INBDE Field Test and NBDE Performance (N = 1,180 participants)

	Observed Correlation	Disattenuated Correlation
NBDE Part I	.58	.65
NBDE Part II	.74	.84

Note. Disattenuated correlations were estimated using the following reliability coefficients: Field Test=.87; NBDE Part I=.94; NBDE Part II=.91

INBDE Failure Rates (%)



* The INBDE standard was introduced this year, based on standard setting activities.

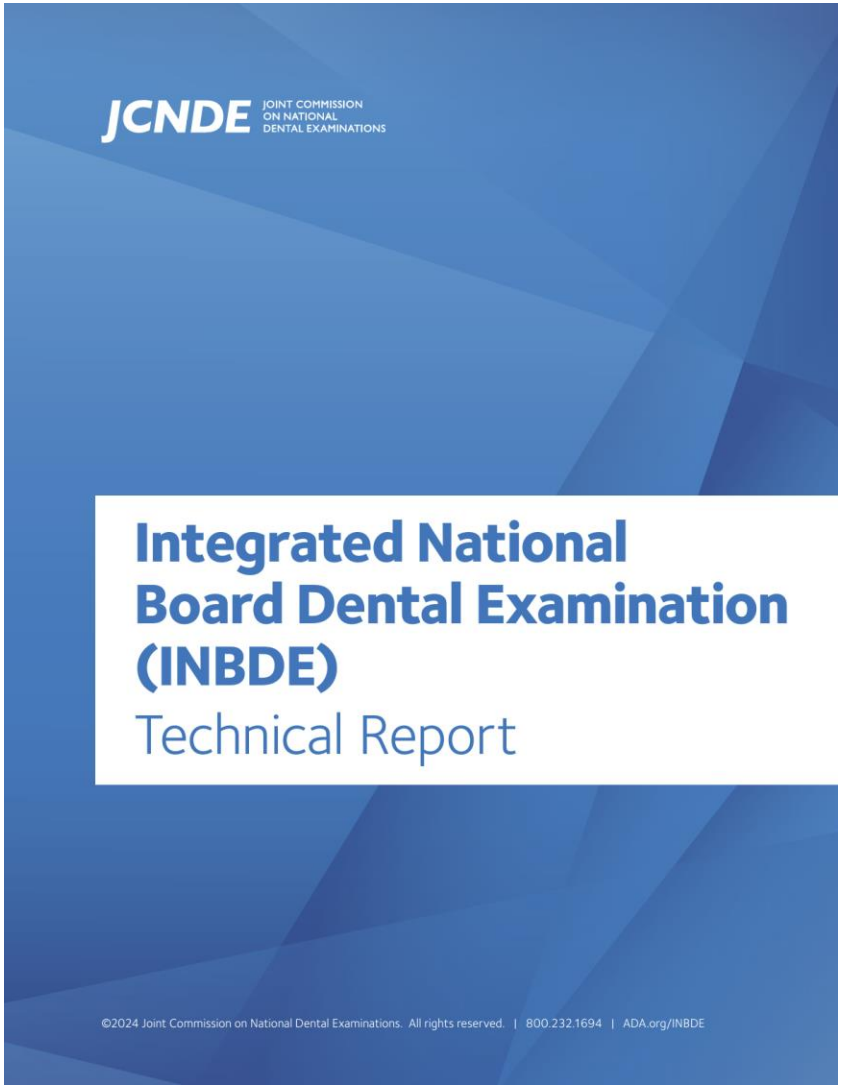
INBDE Failure Rates (Details)

	Accredited†						Non-Accredited‡						Total	
	First Attempt [a]		Mixed Attempt [b]		Retake [c]		First Attempt [a]		Mixed Attempt [b]		Retake [c]		All Attempts	
	N	% Fail	N	% Fail	N	% Fail	N	% Fail	N	% Fail	N	% Fail	N	% Fail
2020	204	1.0	1	0.0	69	7.3	147	38.8	0	-	117	58.1	538	24.5
2021	2,018	1.3	3	0.0	245	16.0	1,340	33.1	1	0.0	971	55.8	4,578	22.3
2022	5,837	0.8	15	0.0	234	13.2	2,144	25.3	10	20.0	1,145	44.7	9,385	12.1
2023	6,648	0.4	11	0.0	136	14.0	3,277	16.0	24	8.3	1,212	33.8	11,308	8.7

[a] Indicates candidates who had never previously attempted the INBDE, NBDE Part I, or NBDE Part II.
[b] Indicates candidates who passed NBDE Part I on their first attempt and subsequently elected to attempt the INBDE instead of NBDE Part II.
[c] Indicates candidates who had previously attempted and failed the INBDE, NBDE Part I, or NBDE Part II.
† Indicates candidates trained by dental education programs accredited by CODA.
‡ Indicates candidates trained by dental education programs not accredited by CODA.

INBDE Technical Report

- Extensive technical documentation for the INBDE is provided in the INBDE Technical Report, which is available at jcnde.ada.org/
  - Validity evidence
  - Failure rates



INBDE Standard Setting (January 2024)

- The standard for the INBDE is criterion-referenced (not norm-based) and determined through a process called “standard setting.”
- INBDE standard setting activities were facilitated in January 2024 by Dr. Gregory Cizek, a nationally recognized expert in standard setting who has authored several books on the subject.
- The standard setting panel consisted of 10 subject matter experts.
- Panel members were selected to be broadly representative and aligned with the purpose of the examination:
  - Practitioners with varying levels of practice experience
  - Dental school faculty and deans
  - JCNDE members
  - Members of dental boards
  - Current and former JCNDE Test Construction Team members
  - Geographically representative

INBDE Standard Setting (January 2024)

- Participants were thoroughly trained and underwent a multi-stage exercise, referencing test content and data from INBDE administrations.
- At the conclusion of all activities, participants' evaluations of all aspects of the process were strong and supportive
- The panel's recommendation was approved by the JCNDE in May 2024 and implemented in June 2024.
- The JCNDE closely monitors examination failure rates. INBDE failure rates for calendar year 2024 will be reported in the INBDE Technical Report in 2025.
- Candidates are encouraged to be well-prepared before attempting the INBDE.

The Dental Licensure Objective Structured Clinical Examination

(DLOSCE)

JCNDE JOINT COMMISSION ON NATIONAL DENTAL EXAMINATIONS

The Dental Licensure Objective Structured Clinical Examination

- Gives dental boards the ability to identify those who lack the skills necessary for safe practice.
- OSCEs are commonly used in health professions to evaluate competence.
- Utilizes lifelike 3D models and helps answer the question “Does this candidate demonstrate the critical thinking skills required to be a dentist?”
- Allows for more objective and comprehensive measurement of candidate skills.
- **Helps dental boards in their mission to protect the public.**

What Does the DLOSCE Cover?

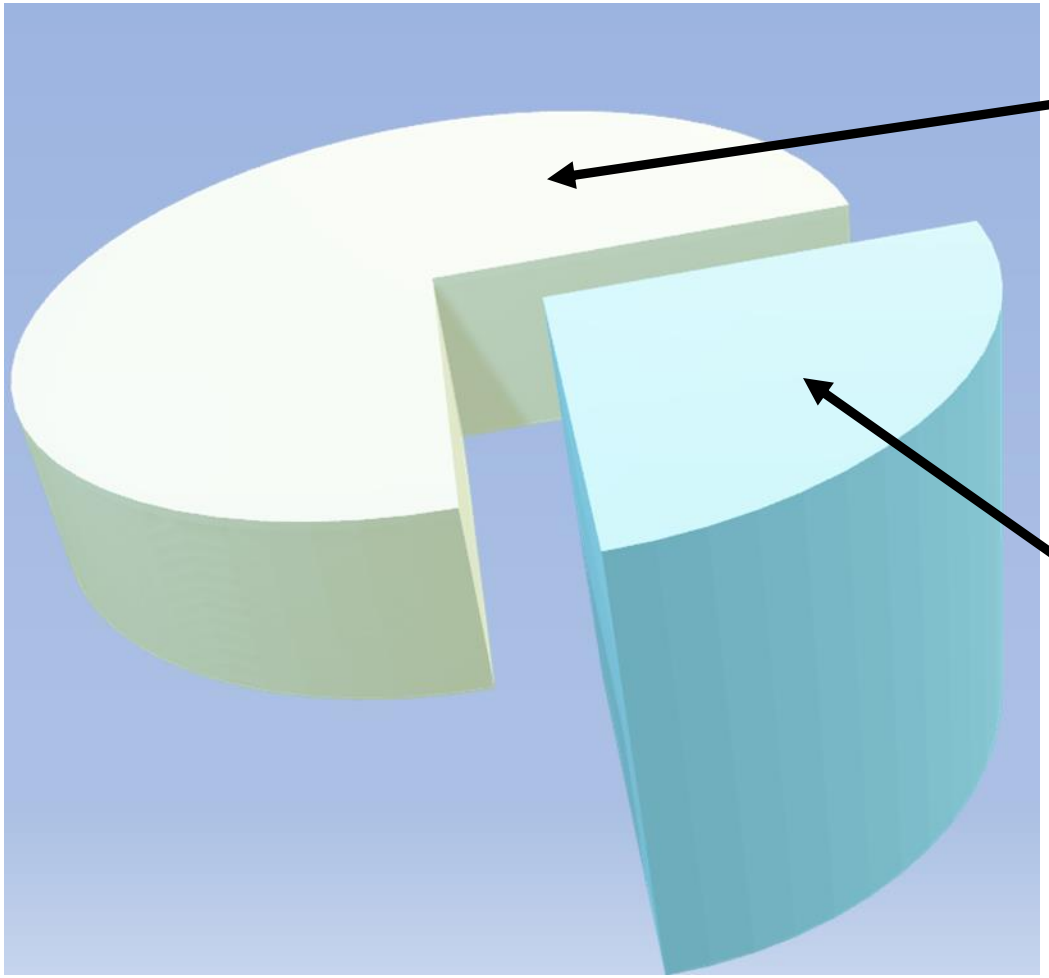
- Focal topic areas:
  - Restorative Dentistry (24%)
  - Prosthodontics (19%)
  - Oral Pathology, Pain Management, and TMD (13%)
  - Periodontics (10%)
  - Oral Surgery (9%)
  - Endodontics (8%)
  - Orthodontics (6%)
  - Medical Emergencies (6%)
  - Prescriptions (5%)
- Diagnosis and Treatment Planning—as well as Occlusion—are covered across the topics listed above.
- The DLOSCE includes questions involving patients of various types and backgrounds, including pediatric, geriatric, special needs, and medically complex patients.

DLOSCE Sample Questions

- The DLOSCE assesses clinical judgment; its questions are modeled on dental clinical situations.
- Sample DLOSCE questions are available for free on the DLOSCE website at jcnde.ada.org/dlosce/dlosce-prepare
- Examples of each type of DLOSCE question are provided
  - Multiple-Choice, Single-Response Questions
  - Multiple-Choice, Multiple-Response Questions
  - Prescription Tasks
- A sample 3D model is also available, so candidates can practice interacting with the model before attempting the examination

DLOSCE 3-Dimensional Models

How do the DLOSCE and INBDE Differ?



“Domain of Dentistry” (INBDE)

DLOSCE Content Domain. Clinical content directly applicable to chairside treatment. **Also represents overlap between INBDE and DLOSCE.**

How do the DLOSCE and INBDE Differ?

- The INBDE and DLOSCE **both assess clinical competence** *(e.g., diagnosis and treatment planning, oral health management)*. However, key differences exist:
  - The **DLOSCE** is focused exclusively on the **clinical tasks** a dentist performs while providing direct, chair-side treatment to **patients** *(a **narrower** focus)*.
    - Micro-judgments, errors, and knowledge of success criteria
  - The **INBDE** focuses on **cognitive skills** *(a **broader** focus)*.
    - Biomedical and behavioral underpinnings of clinical decisions, knowledge that includes the "why"
    - Practice and profession considerations, evidence-based dentistry, being good consumers of research, patient oral health care education, etc.

How do the DLOSCE and INBDE Differ?

DLOSCE Example	Corresponding INBDE Example
Review patient information and write an appropriate prescription.	Understand basic principles of pharmacokinetics and pharmacodynamics for major classes of drugs and over-the-counter products to guide safe and effective treatment.
Identify the final needle position (point of insertion, angulation, and depth) immediately prior to injection that will best accomplish complete local anesthesia for a given procedure.	Understand local and central mechanisms of pain modulation.
Identify one or more flaws present in a metal-ceramic restoration.	Understand dental material properties, biocompatibility, and performance, and the interaction among these in working with oral structures in health and disease.
Epidemiology and statistics are <u>not</u> covered on the DLOSCE.	Understand the principles and logic of epidemiology and the analysis of statistical data in the evaluation of oral disease risk, etiology, and prognosis.

DLOSCE Core Facts

- The DLOSCE contains 150 questions and requires 6 hours and 45 minutes to administer.
- Administrations occur at Prometric professional testing centers located throughout the US.
- The 2024 DLOSCE fee is $975.
  - This fee includes official results reporting to the candidate, three licensing jurisdictions, and the candidate's dental program (if CODA accredited).
  - With respect to reporting to three licensing jurisdictions, the request to send these reports must be made at the time of application, in order to be covered by the above DLOSCE fee. Results requests made after this time are subject to an additional reporting fee.

DLOSCE Administration Windows

The DLOSCE is administered in testing windows, with candidates permitted one administration per window.

Upcoming DLOSCE administration windows are as follows:

TESTING WINDOW	FIRST DAY OF TESTING	LAST DAY OF TESTING	CANDIDATES AND DENTAL BOARDS RECEIVE EXAMINATION RESULTS NO LATER THAN:
1	Dec 11, 2023	Mar 15, 2024	Apr 14, 2024
2 (retake only*)	Apr 22, 2024	Sept 27, 2024	4 weeks after candidate attempts the examination
3	Dec 11, 2024	Mar 15, 2025	Apr 12, 2025
4 (retake only*)	Apr 22, 2025	Sept 27, 2025	4 weeks after candidate attempts the examination

**"Retake only" windows are available only to candidates who have attempted the DLOSCE previously and failed. First-time candidates must complete the DLOSCE in a "regular" testing window.*

DLOSCE Administration Schedule

Administration Schedule

SECTIONS	MINUTES
Tutorial (optional)	25
Section 1 (37 Questions)	75
Scheduled Break (optional)	10
Section 2 (37 Questions)	75
Section 3 (2 Prescription Tasks)	10
Scheduled Break (optional)	30
Section 4 (37 Questions)	75
Scheduled Break (optional)	10
Section 5 (37 Questions)	75
Post-examination survey	20
Total Time	**6 hours 45 minutes**

DLOSCE Results Reporting

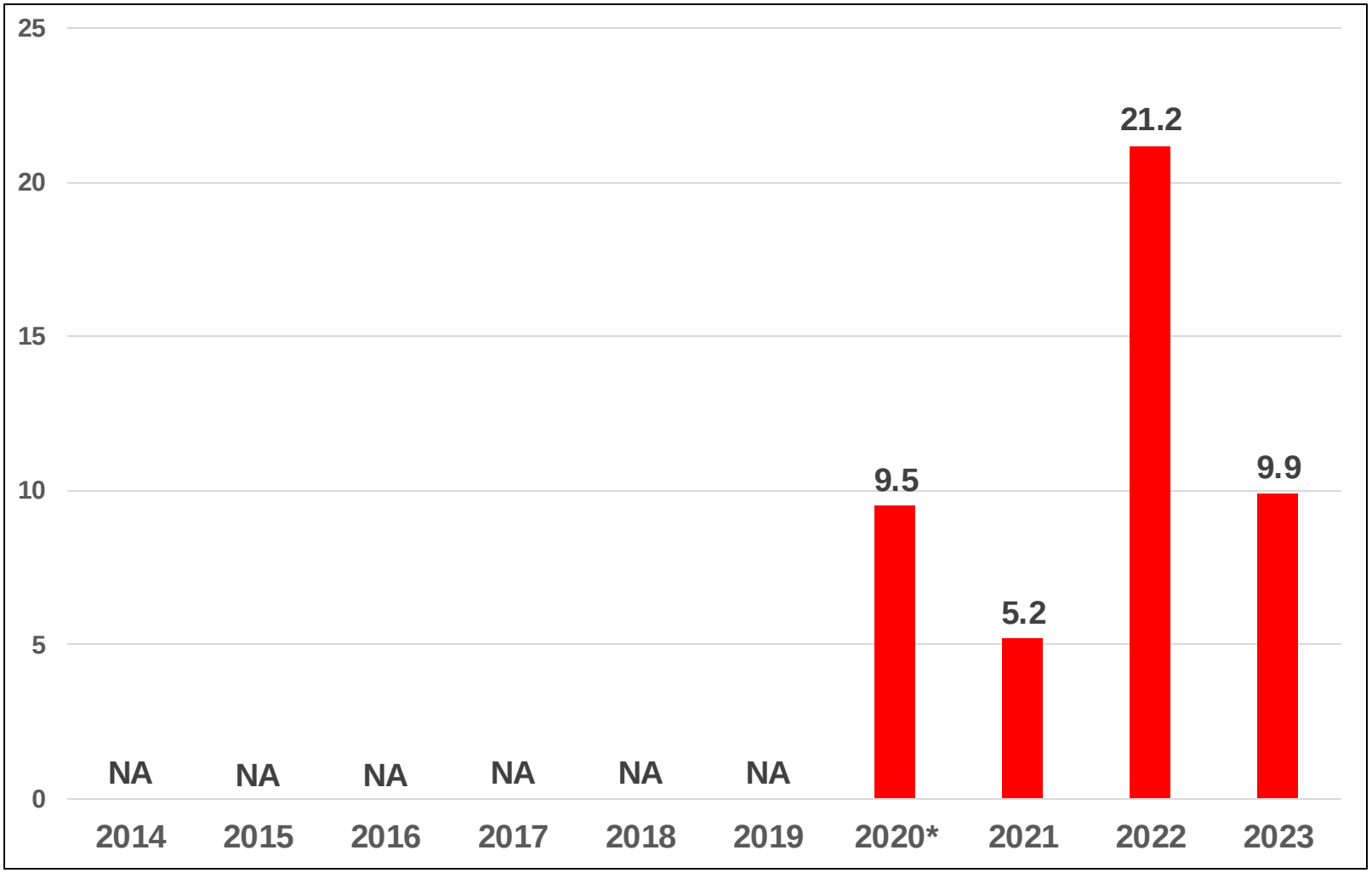
DLOSCE results reporting mirrors that utilized for the INBDE

- **Candidate Results:** DLOSCE results are reported as Pass/Fail
  - Candidates who pass simply receive notification they have passed.
  - For remediation purposes, candidates who fail are provided with information concerning their overall performance, and their performance in eight (8) DLOSCE areas.

- **School Results:** Candidate pass/fail status, monthly reports, and annual reports are all reported to dental schools through the DTS Hub.
  - Monthly and annual reports describe how a school performed on the INBDE relative to other schools.

- **State Board Results.** Candidate pass/fail status is reported to dental boards through the DTS Hub.

DLOSCE Failure Rates (%)



* A new standard was introduced this year, based on updated standard setting activities.

DLOSCE Psychometric Characteristics

Observed and Fully Disattenuated Pearson Correlations between DLOSCE and INBDE Scores: 2020-2023 (N = 116)*

Observed Correlation	**.66**
Disattenuated Correlation	**.79**

Reliability (Coefficient alpha) (2020-2023):

- Ranged from .77 to .79 across examination forms.

Classification Accuracy (2020-2023):

- Ranged from .94 to .95 across examination forms.

Classification Consistency (2020-2023):

- Ranged from .91 to .92 across examination forms.

* Disattenuated correlations were estimated using the following reliability coefficients: DLOSCE=.79; INBDE=.90. Estimates are based on data from candidates attempting the examination for the first time.

Evidence supports the DLOSCE

The DLOSCE and Performance in 3rd Year Dental Clinical Courses[1]

	Observed Pearson Correlation	Partially Disattenuated Pearson Correlation	Fully Disattenuated Pearson Correlation
Full Study Sample (N=40)	.37*	.46*	.51*
Study Sample with Outlier Removed (N=39)	.57*	.70*	.76*

[1] The third-year courses covered the following areas: Oral Pathology, Oral Surgery, Pediatric Dentistry, Prosthodontics, Endodontics, Orthodontics, Medical Emergencies, Management of Medically Compromised Patients, Health Promotion, and Dental Practice Operations. The partially disattenuated correlations were estimated assuming a reliability coefficient of .66 for the letter of commendation (LOC) sum scores. The fully disattenuated correlations were estimated assuming reliability coefficients of .66 for the LOC sum scores and .83 for the DLOSCE scores. *p < .05

Evidence supports the DLOSCE

- A Senior Associate Dean for Academic Affairs was asked to rate dental student clinical performance:

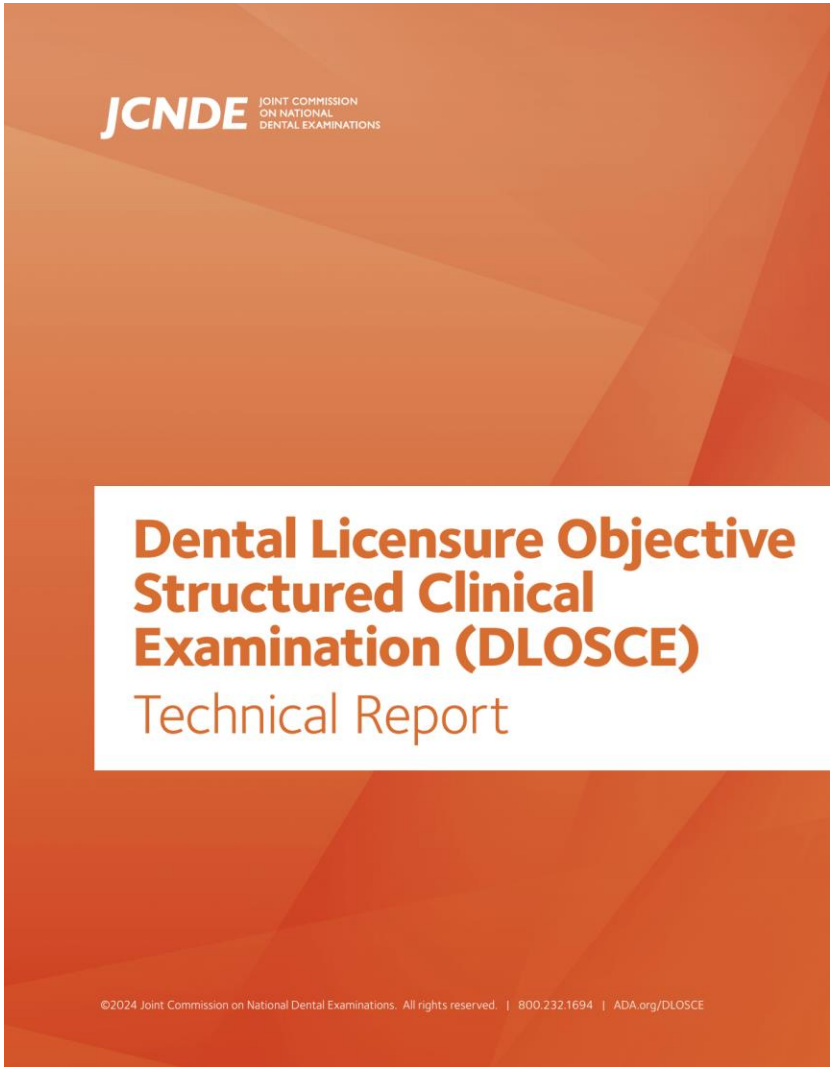
  Please place each student into one of the following categories, with regard to their final clinical performance in dental school, relative to their 4th year peers.

  Top 20% Middle 60% Bottom 20%

- Students placed in the top 20% performed 1.28 standard deviation units higher on the DLOSCE, than those in the bottom 20%.
- In layman's terms, a 1.28 standard deviation unit difference corresponds to:
  - the difference between having an NFL pro-bowl quarterback (or not), with regard to pass completions.
  - the difference in average daily high temperatures in Chicago, between April and December.

DLOSCE Technical Report

- A Technical Report for the DLOSCE is available on the JCNDE website, jcnde.ada.org/
  - Validity evidence
  - Failure rates



Conclusions for the DLOSCE

- Assesses broad range of skills, including clinical and theoretical knowledge and critical thinking
- Standardized (stations, competencies, tasks)
- Psychometric performance shared publicly.
- Strong validity evidence
- Reliable
- Fair
- Protects the public

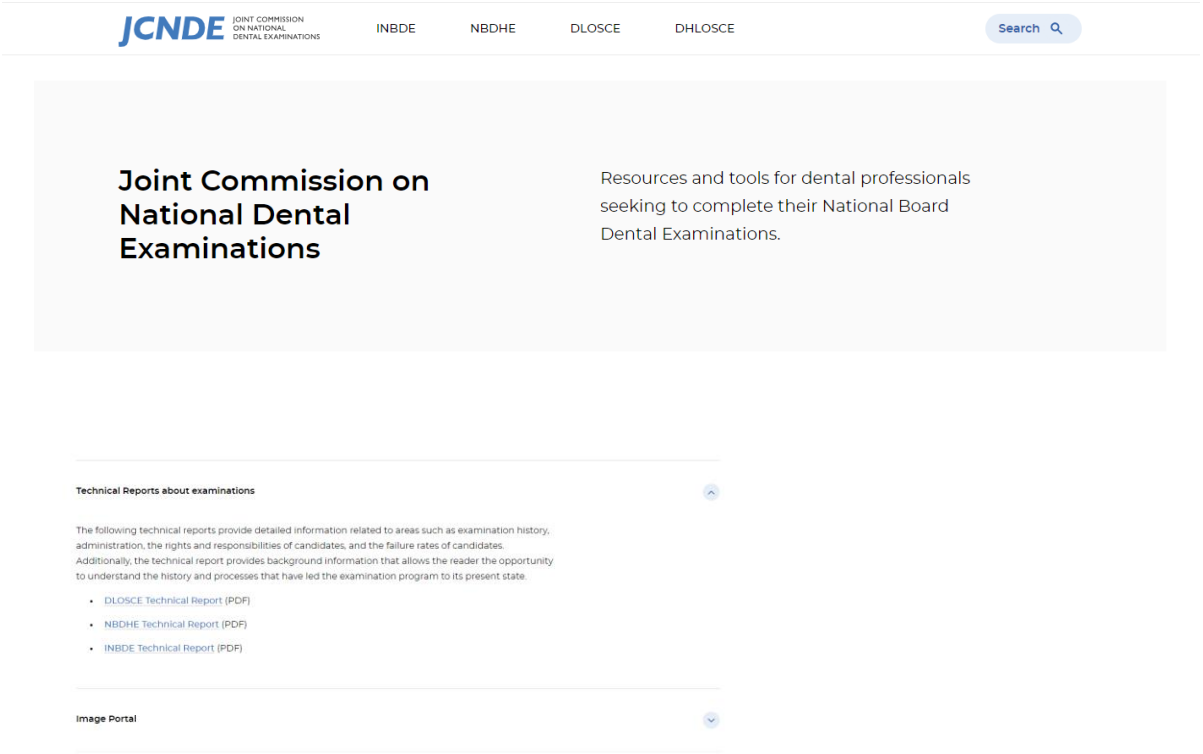
Evidence for Existing Patient and Manikin-Based Examinations

"There is no peer-reviewed scientific evidence that correlates [clinical licensure examination] outcomes with other validated assessments of clinical competence … the process yields no verifiable value in its ultimate objective of providing for the protection of the public." (p640)

Friedrichsen, S.W. (2016). Moving toward 21st-century clinical licensure examinations in dentistry. *Journal of Dental Education, 80*(6), 639-640.

Technical Information about Legacy Clinical Examinations

- JCNDE staff were unable to locate current technical reports by legacy clinical examination testing agencies, simply by navigating their websites.
- In contrast, the JCNDE makes its technical reports publicly available on its website (https://jcnde.ada.org/):



Technical Information about Legacy Clinical Examinations

- When requested, the legacy clinical examination testing agencies have refused to provide technical reports to the ADA.
- Scrutiny of prior technical reports—as well as published findings in peer-reviewed journals—have revealed significant concerns:
  - poor relationships between legacy clinical examinations and other measures of clinical performance
  - poor psychometric properties
  - confusing validity with reliability
  - inexplicable findings

Technical Information about Legacy Clinical Examinations

Example of inexplicable findings. The following quotes come from the published 2011 and 2017 technical reports from a clinical testing agency, involving a patient-based dental hygiene clinical examination. The scales involved include areas such as extra/intra oral assessment, periodontal probing, scaling, and supragingival calculus/deposit removal.

> "All correlations [*among these scales*] are positive and statistically and practically significant. These correlation coefficients range from .37 to .92." (2011)
>
> "The test is sensitive enough to detect high performance on the tasks in this test. Correlations among these four subtests range from .01 to .05." (2017)

The correlations in 2017 do <u>NOT</u> support the underlying measurement of psychomotor skills within this examination! Nor would they support the underlying measurement of clinical judgment.

The experience of schools from a practical perspective

The University of Iowa's Experience with Manikin-based Dental Clinical Licensure Examinations (Dr. Michael J. Kanellis, 2019)

Year	Initial Pass	Initial Fail	Retake Pass	Final Pass
2018-2019	83.3	16.7	100	100%
2017-2018	88.3	11.7	100	100%
2016-2017	86.8	13.2	100	100%
2015-2016	88.1	11.9	100	100%
2014-2015	89.3	10.7	100	100%
2013-2014	85.4	14.6	100	100%
2012-2013	90.1	9.9	100	100%
2011-2012	84.3	15.7	100	100%
2010-2011	Patient-based examination.			100%
2009-2010				100%
2008-2009				100%
2007-2008				100%
2006-2007	92.0	8.0	100	100%
2005-2006	90.0	10.0	100	100%

Final result is always a pass "with little to no remediation."

Conclusions for Legacy Clinical Examinations

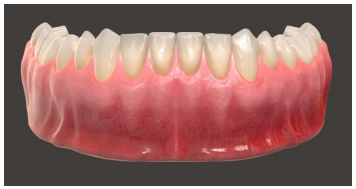
- Unfortunately, the clinical licensure testing agencies fail to make publicly available current information concerning the psychometric performance of their examinations.
- Results are not consistent and contain substantial random error (unreliable).
- Virtually everyone passes in the end.
- Results fail to accurately reflect candidate skills (validity, reliability, fairness).
- Prevent qualified candidates from obtaining a license.
- Potentially harms the reputation of candidates who have the skills but fail anyway.
- Lack sufficient validity evidence to support their usage.
- <u>Fail to protect the public.</u>

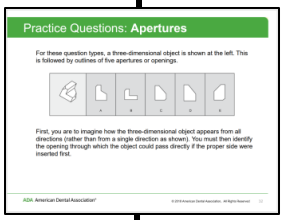
Comparing the DLOSCE with manikin-based licensure clinical examinations

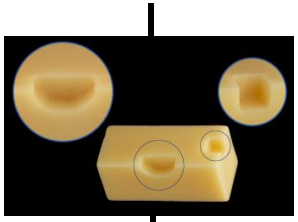
Criteria	Manikin-based Exams	DLOSCE
Amount of time exam has been available	50+ years	Since 2020
Evidence for validity, reliability, and fairness	Weak	Strong
Cost and inconvenience (dental schools, students)	Moderate	Low
Potential for patient harm during administration	No	No
Candidate can influence the passing "bar"	No	No
Likelihood of "false passes"	High	Low
Likelihood of "false fails"	High	Low
Comprehensiveness of measurement	Low	High
Protection of the public	Low	High

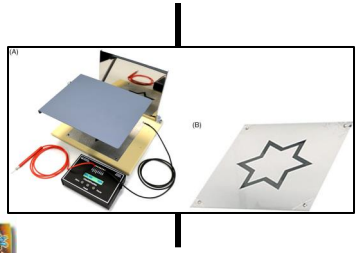
Final evidence-based comparison (rank-ordered)

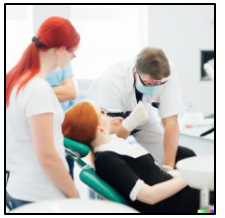
Correlation	Predictor
.57	DLOSCE [A]
.49	Wax Carving [B]
.41	PAT [C]
.34	Wax Carving [C]
.31 - .34	Operation (game) [B]
.31	Mirror Tracing [B]
.18	PAT [B]
.12 - .25	Mirror Tracing [C]
.16	Manikin-based Clinical Examination [D]
.10 - .21	Operation (game) [C]
.03	Patient-based Clinical Examination [E]











Criterion Measures: A – 3rd year dental clinical courses; B – 1st year Restorative Dentistry; C – 1st year Dental Anatomy; D – Overall, across all manikin correlations presented; E – Overall, across all patient correlations presented.

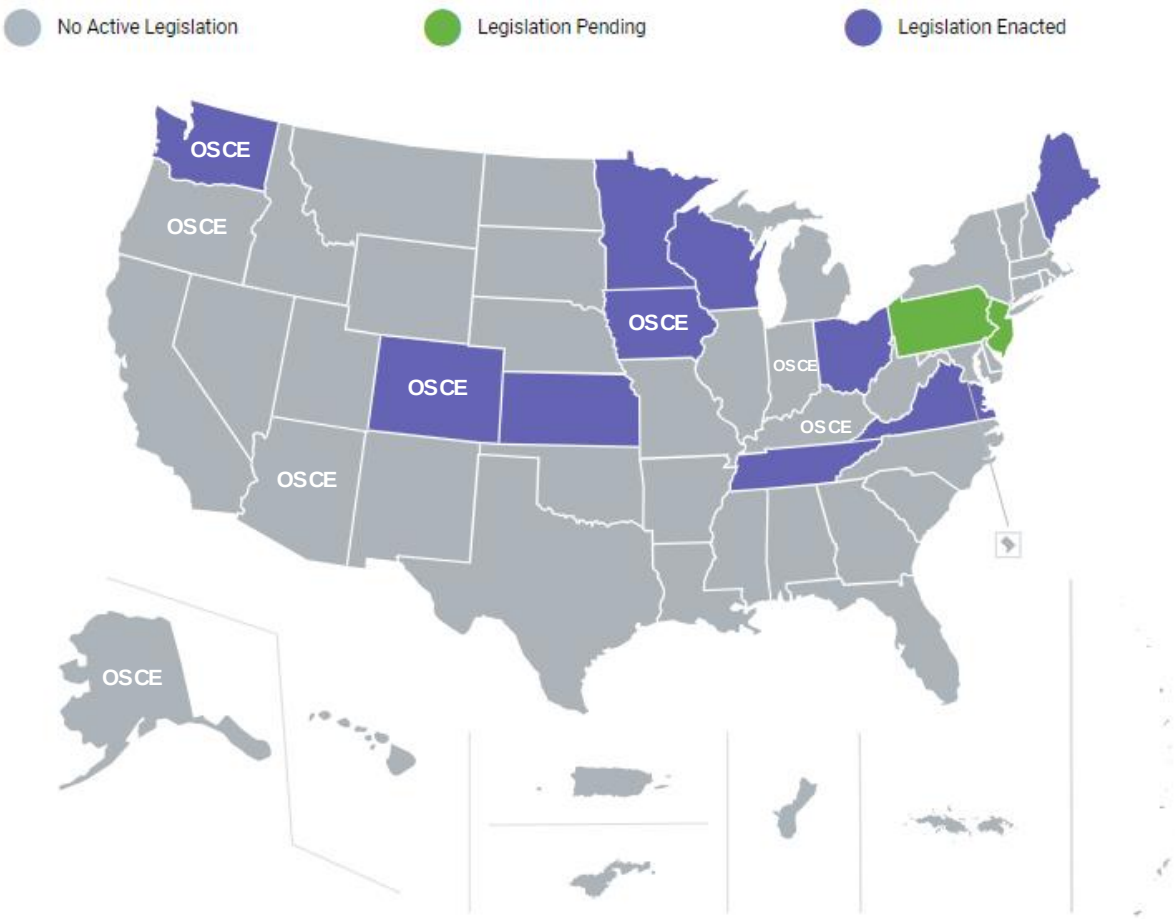
Acceptance by Dental Boards

- The states below have adopted regulations which permit the acceptance of the DLOSCE. In some states, passage of the DLOSCE only partially fulfills the clinical examination requirement for licensure.
  - Alaska*
  - Arizona
  - Colorado
  - Indiana
  - Iowa*
  - Kentucky
  - Oregon
  - Washington
- The new dentist and dental hygienist compact has implications for the DLOSCE. Dental boards in several additional states have also expressed interest in learning more about the JCNDE's OSCEs.

* Partial fulfillment of state's clinical licensure examination requirement

Dentist and Dental Hygienist Compact

- The states appearing below in **purple** accept the DLOSCE and have enacted legislation to accept the DDH Compact.
  - Alaska*
  - Arizona
  - **Colorado**
  - Indiana
  - **Iowa***
  - Kentucky
  - Oregon
  - **Washington**
- Individuals who are licensed in the purple states indicated will be eligible to seek compact privileges in the other states that appear in purple on the map.
- See https://ddhcompact.org/



https://ddhcompact.org/compact-map (downloaded Sept 13, 2024)

* Partial fulfillment of state's clinical licensure examination requirement.

Modernizing Dental Licensure

- Join the Joint Commission in advancing the DLOSCE!
- The JCNDE needs your help to modernize dental licensure in your state.
- Learn more about the DLOSCE at the JCNDE's website: jcnde.ada.org/

- Interested in becoming a champion for the DLOSCE? Let us know!

David Waldschmidt waldschmidtd@ada.org

Matthew Grady gradym@ada.org

Updates on JCNDE Dental Hygiene Examination Programs: The NBDHE and DHLOSCE

Thursday, October 10, 2024

12:00 PM - 1:15 PM (Central)

Register via the JCNDE's dental hygiene examination web pages:

www.ada.org/nbdhe and www.ada.org/dhlosce

Questions?

Thank you!