



Use of Human Subjects in Clinical Licensure Examinations

A white paper of the American Student Dental Association

Published Oct. 31, 2016

Use of Human Subjects in Clinical Licensure Examinations

This white paper was developed by the American Student Dental Association (ASDA). ASDA is a national student-run organization that protects and advances the rights, interests and welfare of dental students. It introduces students to lifelong involvement in organized dentistry and provides services, information, education, representation and advocacy.

ASDA is grateful to the national leaders, alumni and consultants who have contributed to this paper.

Contact: American Student Dental Association
211 E. Chicago, Suite 700
Chicago, IL 60611
Tel: 312-440-2795
Email: ASDA@ASDAnet.org
ASDAnet.org

Copyright © 2016 American Student Dental Association
All Rights Reserved

Cover photo by Lauren Lewandowski, Buffalo '18

Table of Contents

OVERVIEW	1
INTRODUCTION	2
HISTORY & CONTEXT	4
FORMAT OF THE CURRENT CLINICAL LICENSURE EXAMINATION	6
PROBLEMS WITH THE CURRENT CLINICAL LICENSURE EXAM	7
CURRENT ALTERNATIVES TO THE LIVE-PATIENT CLINICAL EXAMINATION	13
RECOMMENDATION FOR AN IDEAL LICENSURE EXAMINATION	16
SOURCES	17

OVERVIEW

Each year thousands of Americans are used as test subjects in clinical licensing examinations by candidates seeking a dental license. Irreversible surgical procedures are performed on these patients without the same comprehensive supervision they typically receive within an accredited dental school setting to ensure their protection.

The outcomes of these clinical exams never result in a 100 percent pass rate; and failure rates have been as high as 80 percent in some years.⁹ These failed procedures left patients with sub-standard dental surgery outcomes and the need to seek follow-up care from a licensed dentist to restore the failed procedures. Despite the best efforts of the dental candidates and those proctoring the examinations, not all test subjects receive follow-up care and could suffer from permanent damage to their teeth.

The use of human subjects in clinical dental licensing examinations began in the early 1900s; and the debate over the validity, reliability and ethical nature of this practice has been widespread within dentistry for more than half a century. Despite the dialogue, thousands of Americans are still being used each year as test subjects in these examinations.

Alternatives exist, though the vast majority of state dental boards have ignored the glaring reliability, validity and ethical issues that accompany the administration of clinical licensure examinations.

Members of the American Student Dental Association (ASDA)—the students who are required to perform irreversible surgical procedures on our fellow man—stand firm in our conviction that the practice of using human subjects in clinical licensing examinations is flawed and unethical. Patients should not be put into a situation where there is a possibility they will receive sub-standard treatment that may irreparably harm them.

We stand by the American Dental Association (ADA), the American Dental Education Association (ADEA), the Student Professionalism and Ethics Association in Dentistry (SPEA) and many dental school deans across the country,¹ among others, who believe that to protect the public, maintain the integrity of the profession of dentistry and ensure that only competent dental school graduates can gain a dental license, performing exams on human subjects in a high-stakes, one-shot scenario must end.

This white paper serves as a foundation to advocate for the patients whom we serve, the profession we are passionate about and the advancement of professional dental licensing in the United States of America.

INTRODUCTION

For nearly 55 years the use of human subjects in clinical dental licensing exams has been questioned as a valid, reliable and ethical means of examining candidates for dental licensure by organizations within the dental community.²⁻⁵ During the early 1990s the debate spiked as conferences, task forces and special forums were called to address the issue.^{2,6} This vigorous discussion has continued without resolution.

The public policy goal in licensing health care providers, including dentists, is to protect the public from unqualified health practitioners.⁷ No states in this country require physicians, or health care providers other than dentists, to undertake a clinical licensing examination that involves the use of human subjects.⁸

In 1991, Dr. Richard Buchanan, former dean of the Rutgers School of Dental Medicine and member of the American Association of Dental Schools (AADS) Task Force on Licensing and Credentialing and the American Association of Dental Examiners (AADE) Special Forum concluded from these summits that, "... entry-level examinations using human subjects are now absolutely inappropriate." He then goes on to state, "I believe strongly that the use of human subjects in clinical examinations is inconsistent with the basic values of our profession. It distorts our curriculum, compromises patient care, interferes with faculty ability to prepare students for clinical practice, and diminishes the effectiveness of student learning."²

No states in this country require physicians, or health care providers other than dentists, to undertake a clinical licensing examination that involves the use of human subjects.

Lawrence Meskin, past editor of the Journal of the American Dental Association, wrote "With two-thirds of the exam failures linked to clinical procedures, about 4,500 patients receive treatment that is judged sub-standard."⁹

If 4,500 people were potentially harmed in one year, and theoretically thousands more in subsequent years, the question must be raised: Is this ethical?

Ten years after the heightened awareness began, and with no significant progress made toward eliminating testing on live patients, the ADA House of Delegates adopted resolution 64H-2000, which

called for the elimination of the use of human subjects in the clinical licensure examination by 2005.^{11,12} When there were no major changes made by the deadline, similar resolutions were passed in 2005 and 2006, reinforcing the call for an end to live-patient exams, as well as describing best practices to achieve that goal.¹³⁻¹⁵

Another decade passed with no progress. In 2011, the American Dental Education Association published its updated policy statements, as well as recommendations and guidelines for academic institutions, wherein they stated: “By the year 2015, the live patient exam for dental licensure should be eliminated, and all states should offer methods of licensure in dentistry that include advanced education of at least one year, portfolio assessment, and/or other non-live patient-based methods and include independent third-party assessment.”¹⁶

As of 2016, no significant nationwide changes to the licensure exam process have been made.

HISTORY & CONTEXT

In the United States, state legislatures have authority to regulate the practice of health professions in their respective states.^{17,18} Each state has its own Board of Dentistry, often referred to as the Board of Dental Examiners, an agency created by the legislature to govern the practice of dentistry within the state.

The state legislature generally empowers each board to:¹⁷

- » Institute qualifications for licensure
- » Grant licenses to qualified individuals
- » Set the standards of care and professional conduct
- » Discipline those who engage in misconduct
- » Recommend policy to the legislature

State-granted dental licensure is the only path for candidates who wish to practice dentistry. Professional licensure within the dental profession began in 1883. Six state dental boards combined to form the National Association of Dental Examiners.¹⁹ Each state began to pass laws regulating a dentist's ability to practice dentistry within their state. In 1926, William Gies, in his historic Gies Report, recommended "a uniform national examination as a basis for suitable interstate exchange of licenses."^{19,20}

In 1929, the National Board of Dental Examiners (NBDE) was developed to administer a three-part board examination that consisted of two written examinations and one clinical licensure exam.²¹ This system exists today and is known as the National Board Dental Exam Part I & II. The written exams are administered by the Joint Commission on National Dental Examinations (JCNDE). The Clinical Licensure Examination is regulated by each state and administered by either a regional testing agency or the state itself.

From 1928-1967, each state was responsible for administering its own clinical examination. In 1967, the Northeast Regional Board Examination was first administered. Multiple state boards accepted those who passed this clinical exam. Today, there are five regional licensing examinations offered by:

- » Central Regional Testing Service (CRDTS)
- » Commission on Dental Competency Assessments (CDCA, formerly the North East Regional Board (NERB))
- » Council of Interstate Testing Agencies (CITA)
- » Southern Regional Testing Agency (SRTA)
- » Western Regional Examining Board (WREB)

As of 2016, Delaware and the Virgin Islands are the only two states/territories that administer their own clinical exams. California, Colorado, Connecticut, Kentucky, Minnesota, New York, Ohio and Washington are the only states that offer or accept alternatives to the traditional, one-shot, human-subject clinical examination.

In 2016, the Iowa legislature directed the Dental Board and the University of Iowa College of Dentistry to jointly study the use of a station-based exam for the licensure of dentists for implementation no later than academic year 2017-2018. The two groups are required to develop a joint strategy for alternative and improved testing methods involving the use of live patients. The bill requires the groups to file a joint report to the General Assembly by December 15, 2016.

Today, candidates for initial licensure generally must meet four requirements:

- » Graduate from a dental school accredited by the Commission on Dental Accreditation (CODA)
- » Pass two comprehensive written examinations of factual knowledge in the scientific foundations and practice of dentistry (NBDE Part I & II)
- » Be free from certain legal infractions
- » Complete a live-patient, clinical licensure examination, unless they fall within one of the few states where alternatives are available

We have searched in vain for evidence that any state requires dentists to show periodic continued competency by means of a performance examination (as required of initial candidates) or via records or other documentation of outcomes (as required in a portfolio system).²²

There are also no states that require specialty practitioners to show, through performance on a patient, competence in any area where they announce that they have specialty training or elevated proficiency. Unless they practice in one of the states where alternatives exist, they must undergo a general dental clinical licensure examination, though they will never practice those modalities again once they pass the exam.

FORMAT OF THE CURRENT CLINICAL LICENSURE EXAMINATION

The five regional testing agency examinations have similar formats and require procedures performed on human subjects, though subtle differences exist. The most extensive of the examinations is the ADEX exam, which is administered by the CDCA, CITA and SRTA agencies. The format of this exam is:²³⁻²⁷

- » **Computer-Based Diagnostic Skills Examination (DSE):** 150 questions with the use of simulated patients
- » **Manikin-Based Fixed Prosthodontics Section:** bridge preparation with a crown on both a bicuspid and molar; a third restoration preparation of a ceramic crown on a maxillary anterior tooth
- » **Endodontics:** simulated access preparation on one molar and a simulated access preparation and obturation (fill) of one anterior tooth
- » **Restorative Human Subject Section:** anterior composite preparation and fill, and one posterior class II preparation and fill, which may be completed on one or two patients
- » **Periodontal Human Subject Scaling and Root Planing Section:** one patient on six to eight teeth (some states do not require this portion)

The WREB exam contains the same basic format without the Manikin-Based Fixed Prosthodontics Section.²⁸ The CRDTS exam has the same ADEX format without the DSE Computer-Based Section.²⁹

Whether these are performed during subsequent days, or on separate days with long period intervals, we define these as one-shot high-stakes, human subject, clinical licensure examinations.

PROBLEMS WITH THE CURRENT CLINICAL LICENSURE EXAM

With the variables of the patient’s oral health condition and personal temperament, the clinical licensure examination is difficult, if not impossible, to standardize. That – combined with the ethical implications of delivering treatment that won’t meet the standard of care for patients whose candidates fail – leaves us with the question of why these clinical licensure examinations continue to subject the population and the candidates to such questionable testing scenarios.

The following sections will delve deeper into the issues of validity, reliability and ethics that exist within the clinical licensure examination.

Validity

Dr. David Chambers, editor for the American College of Dentists, defines validity as such: “The main characteristic of valid evaluation is that everyone will agree on what the results mean.”³⁰

In an ADEA survey of dental school deans conducted in 2003, 82 percent felt that the clinical licensure examinations were not valid for decision-making purposes, and more than 90 percent believed change was necessary.

Predictive validity refers to those situations in dental licensure in which judgments about future behavior, based on the observation of that behavior, tend to be correct.³¹

Through the years, both empirical and statistical data have been collected regarding the lack of validity in clinical licensure examinations.^{1,4,30-37}

In an ADEA survey of dental school deans conducted in 2003, 82 percent felt that the clinical licensure examinations were not valid for decision-making purposes, and more than 90 percent believed change was necessary.¹ In another survey of practicing dentists who took a clinical licensing exam, 51.6 percent did not believe their licensure exam was a valid assessment of their clinical abilities.³⁸

Studies beginning in the mid-1970s through the present date also confirm and support the empirical data documented above.^{1,4,30,32-37}

In the early 1980s, Dr. Uri Hangorsky looked at the relationship between dental students’ class rank and their pass rates on the NERB exam. The results showed no positive correlations between scores attained during dental students’ fourth year of instruction and their performance on the clinical exam. In one of the schools used in this study, nearly one-third of candidates who failed the exam were in the top third of their class, while the bottom 10 percent of the graduating class all passed the exam.³²

In 1996, Casada et al. conducted a similar analysis. Their results did not reveal any strong correlations to success in dental school and subsequent success on the clinical licensing exam, though there was a significant but weak association between class rank and passing the exam.³⁹

Two years later, Formicola et al. repeated the study. Not only was there no positive correlation between a student's success in dental school and passing the one-shot exam, but a negative correlation was found in the prosthodontics section. If students failed the dental school prosthodontics mock board examination, they were somewhat more likely to pass the NERB and vice versa.³⁶

Further studies by Ranney et al. in 2003⁴⁰ and 2004,³⁵ Gerrow et al. in 2006,⁴ and Chambers in 2011,³⁴ continue to confirm the lack of validity in the current, human-subject, one-shot, initial clinical licensure examination.

Internal analysis and studies by WREB and CRDTS have made claims that their examinations are valid, and the AADE has claimed that their exams have repeatedly demonstrated psychometric validity and reliability.^{5,41,42} No external study or analysis of the regional testing agencies can confirm their findings.

A 2005 internal study by the University of Florida's liaison to the Florida State Board of Dentistry, Dr. Carol Stewart, found a significant correlation between success in school and on Florida's proprietary clinical licensure exam.^{43,44}

The Florida exam has now been replaced with the ADEX exam, which does not have proven validity by any external studies. The few internal studies that do claim validity to human-subject clinical licensure by regional testing agencies are outweighed by the sheer number of external studies that have found a lack of validity.

Reliability

Even if achieving validity were possible, simply validating the examination would not completely address the issue. Reliability and its sub-categories of standardization, and proper breadth and depth of skills assessment, would need to be corrected as well.

Reliability has long been a concern with clinical licensure exams,^{9,31-33,35-38,45} and is defined as being consistently good in quality or performance, and having the ability to be trusted. Dr. Chambers states: "When a measure is reliable, that means there is agreement on what the results are... A reliable test will give similar people similar scores. A reliable practical examination will be scored similarly by different people at different times."³⁰

It is alarming when reliability isn't consistent in a high-stakes exam, especially when those who pass inevitably practice their skill set on the public.

One area of unreliability in the current clinical licensure exams is in the variation found in pass rates. Damiano et al. looked at pass rates over a 10-year period from 1979-1988 and found statistically significant variability. “Sixteen state and four regional dental boards with jurisdiction over 47 states replied to the survey (94 percent response). Complete data... describing the number of applicants, the number passing and the percent passing the clinical portion of the dental boards for 1979-1988 were received from boards with jurisdiction over 25 states...”⁴⁶ The results indicated “the average percentage passing the exam ranged from 50 percent in Alaska to 97 percent in Alabama.”⁴⁶

In 2003, Ranney et al. showed a 31.25 percent failure rate at the University of Maryland School of Dentistry.⁴⁰ When failure rates this high occur, the scoring of the exam should be called into question.

According to Chambers et al.: “Standards have gradually emerged in high-stakes testing, such as licensure in various professions, admissions to advanced educational opportunities, or for highly selective jobs. Reliability coefficients of 1.80 to 0.90 are usually expected, although, occasional r-values as low as 0.70 may be encountered.”³³

In dental licensure, there is an expected high-level pass rate, as dental schools ensure candidates are adequately prepared for the exam prior to allowing them to take it. A test whose reliability is 0.90 would fail about 1 percent of those who should have passed, and one with a reliability of 0.70 would fail about 3 percent. These percentages, though unfortunate, are an acceptable range of reliability. The reliability of initial licensure examinations in the United States is 0.40. Dr. Chambers finds that, “The current one-shot initial dental licensure system misclassifies at least 20 percent of candidates who must retake the tests, plus an unknown number of candidates who pass the tests by luck and should not have been granted a license.”³³

If one out of every five dentists is misclassified due to poor reliability, with an unknown number receiving their license when they are not ready, the one-shot human subject, clinical licensure exam is flawed.

Those who fail the examination, whether due to misclassification or sub-standard work, are then permitted to take it again up to three times with no remediation or further training. In 2014, there was an 81.6 percent pass rate among first-time candidates on the WREB exam, though 96.4 percent of candidates eventually gained their license that year through multiple attempts.⁴⁷

If candidates are not required to receive further training after failing a licensure examination, they either continue providing substandard care to patients until they get it right or they pass the exam the next time they take it due to the lack of validity and reliability of the exam. Both scenarios present concerns when it comes to the patient’s safety.

Standardizing human subjects

**anatomically, physiologically,
pathologically and psychologically
is impossible.**

Standardization is another aspect of reliability. Despite the fact that each candidate performs similar procedures on human subjects, no two humans are identical, therefore each clinical licensure examination is different.^{48,49} Variations inevitably are encountered, and standardizing human subjects anatomically, physiologically, pathologically and psychologically is impossible.²

The dental school curriculum, which must conform to the standards set by the Commission on Dental Accreditation (CODA), is robust and thorough. The breadth and depth of the education is continually scrutinized and modified to ensure that new dentists have the knowledge and skills to practice to the standard of care in each and every discipline of dentistry. According to Dr. Ken Kalkwarf, past president of the American College of Dentists, "In their quest to improve reliability, they [the regional testing agencies] have narrowed the scope of their evaluation and have... evolved the assessment of care provided to patients...to an extremely narrow range of procedures to restore teeth and remove calculus."⁵⁰ He continues on to state "that this pursuit of reliability has negatively impacted the validity...of today's exam."⁵⁰

Upon gaining a dental license, new graduates will be responsible for the comprehensive care of the patients within their practice. They will be expected to perform, or at least be knowledgeable in, the complex disciplines of: restorative dentistry, periodontics, diagnosis and treatment planning, endodontics, prosthodontics, oral surgery, orthodontics, pathology, implantology, pharmacology, case management and proper relationships with patients.

**With such a narrow scope of
procedures tested, the current
system is unreliable in determining
whether a new dentist is truly
competent to practice dentistry and
is not reflective of contemporary
practice.**

With such a narrow scope of procedures tested, the current system is unreliable in determining whether a new dentist is truly competent to practice dentistry and is not reflective of contemporary practice.⁴⁸ If the results of the examination cannot glean this information, then a new means of entry to dental practice must be instituted.

Ethics

The premise of dental licensure inherently poses the question asked by Dr. Meskin: "Is it ethical to use human subjects for the purpose of discovering incompetence?"⁹

According to Formicola et al., "A principle feature differentiating a profession from other types of occupations is the existence of and adherence to a set of ethical standards for conduct."⁴⁸

According to the ADA Principles of Ethics and Code of Professional Conduct, dentists have the duty to protect and promote the welfare of their patients.⁵¹

Each time a candidate fails a clinical licensure examination on a patient, that patient is potentially left with a restoration or periodontal condition that is below the standard of care. Failures in restorative procedures typically mean that the patient has had irreversible harm rendered to them.

How can dentists and health care providers justify an exam that carries the potential for corruption and may not always have the patient's best interests in mind?^{9,38,52} In a study regarding ethical lapses on licensure examinations, Feil et al. reported that 19.3 percent of students were aware of classmates who prematurely treated a lesion for examination purposes; 8 percent reported knowing classmates who purposefully created a lesion for the exam; 32.5 percent reported knowledge of unnecessary radiographs; 13.7 percent reported knowledge of instances where a patient was coerced into a treatment choice that would have otherwise not been recommended; and 23.9 percent reported they had neglected to make arrangements for follow-up care despite the fact that it was necessary for the patient.³⁸

In the American Student Dental Association White Paper on Ethics and Professionalism in Dental Education, 2006-07 ASDA President Dr. Brooke Loftis stated: "ASDA continues to fully support the elimination of live patients in its current format for the use of initial clinical licensure. How can we continue to allow an examination process that encourages marginally unethical behavior from students? We must protect our patients and provide them with the best care possible. After four years, the clinical licensure exam procedures I recently completed are the last clinical procedures I will perform within my dental school. I will never forget the students who were delaying treatment of patients, over-radiating their patients, over-treating lesions and paying outside services for the supply of patients to use during the exam."⁵³

ASDA believes a one-shot, high-stakes examination places undue stress on the candidate, and this stress can play a negative role in achieving competent care for the patient. These stresses are not typically encountered in a normal practice setting and therefore decrease both the ethical integrity and reliability of the exam.

Dental specialists are not exempt from the pressures of initial licensure examinations. Currently there are nine ADA-recognized dental specialties wherein those who specialize commit to practice only procedures defined within their specialty. In most states, specialists are required to perform procedures on human subjects that they will never perform again.^{54,55} Weaver asks, "What sense does it make to require a specialist like an oral pathologist...to risk doing irreversible harm to a human subject's tooth for the sake of passing a test with absolutely no applicability to the dentist's area of practice?"⁵²

Inhumane Treatment

An unacceptable consequence of the human subject examination is that patients are treated as a commodity. The dental student only sees the procedure, and overlooks the complex person with comprehensive care needs before them. This directly violates CODA Standard 5-2, which states that “the use of quantitative criteria for student advancement and graduation must not compromise the delivery of comprehensive care.”⁵⁶

This is coupled with the fact that patients are often paid, purchased, sold or traded when a candidate can’t find a patient who qualifies for their exam.

A by-product of this environment is that some people saw an opportunity to create a business in providing patients for candidates at a premium.

A by-product of this environment is that some people saw an opportunity to create a business in providing patients for candidates at a premium. Two of the more widely used services are Lu Lau Dental Exam Consultants⁵⁷ and Western Dental Consultants,⁵⁸ which can provide all patients, documentation, assistants and a preparation course for prices up to \$12,000.⁵⁸

Based in California, Lu Lau Dental Exam Consultants boasts “full capacity to handle dental board exams in the United States,” including the Dental Board of California, Western Regional Examining Board, Central Regional Dental Testing Services and the North East Regional Board of Dental Examiners. Lu Lau promises to “provide and manage logistics of primary as well as back-up patients. In case the first patient is rejected for any reason, we will have a fully screened back-up patient for the examination on site and ready to go.”

Western Dental Consultants offer referral services for students who take one of its exam preparation courses. The referral service, patientfindingservices.com, advertises: “We have the qualifying patients you need to pass your dental exam.” The fine print, however, notes: “There may be an occasion where the treatment submitted meets the acceptance criteria listed but is not approved by the grading examiners. If examiners believe that the submitted treatment is not in the best interests of the patient or the examination process, the treatment will not be approved.” This implies that patients are a means to an end, and not the end unto themselves.

CURRENT ALTERNATIVES TO THE LIVE-PATIENT CLINICAL EXAMINATION

Objective Structured Clinical Examination (OSCE)

The Objective Structured Clinical Dental Examination is a multi-station assessment designed to measure specific clinical skills, including diagnosis, interpretation and treatment planning. This examination, typically administered by the National Dental Examining Board of Canada (NDEB), covers up to 14 content areas, including: anesthesia, crowns, endodontics, medical emergencies, operative dentistry, oral medicine, oral surgery, orthodontics, pain, pediatric dentistry, periodontics, pharmacology, radiology and removable prosthodontics.

Most stations require candidates to review patient information (case history, dental charts, photographs, radiographs, casts, models) and answer extended questions. Each question could have up to 15 answer options and one or more correct responses. Some stations may require candidates to write an acceptable prescription for a medication commonly prescribed by general dentists.

A study published in the February 2013 Journal of Dental Education followed 145 students at the Columbia University College of Dental Medicine class of 2010 and 2011 to explore the relationship between student performance on an OSCE assessing preparedness for clinical activity and clinical performance during the first year of clinical training. Researchers found the OSCE to be a “highly reliable exam, with a moderately high correlation predicting future clinical performance.”⁴⁴

Another study published in the March 2016 Journal of Dental Education evaluated whether the OSCE and case presentation were effective measures of overall didactic knowledge and clinical performance in a predoctoral dental curriculum. The study, which evaluated 185 students at the Harvard School of Dental Medicine who graduated between 2010 and 2014, found “a positive association between OSCE scores and clinical and didactic performance, supporting the value of OSCEs as a means of assessment.”⁵⁹

The study, which evaluated 185 students at the Harvard School of Dental Medicine who graduated between 2010 and 2014, found “a positive association between OSCE scores and clinical and didactic performance, supporting the value of OSCEs as a means of assessment.”

The Minnesota Board of Dentistry unanimously voted in June 2009 to accept the two-part National Dental Examining Board of Canada exam to test the competence of University of Minnesota graduates applying for initial licensure. The decision followed a task force review of the examination and the processes the dental school developed to ensure that a quality group of students was admitted, an up-to-date and validated education was offered, and that systems were in place to assess competency on an ongoing basis. The state dental board in 2010 entered into an exclusive partnership with the University of Minnesota School of Dentistry to allow the exam from the National Dental Examining Board of Canada.

The NDEB licensure process for those who graduate from an accredited dental program requires candidates to pass the NDEB written examination and the OSCE. Candidates also must complete Part I and II of the National Board Dental Examination and pass the Minnesota jurisprudence exam. Board members have an agreement with the University of Minnesota to observe the calibrations of their students. The NDEB is recognized for licensure only in Minnesota and is available only to graduates from the University of Minnesota since 2010.

Portfolio-Based Licensure

In 2015, six dental students in California became the first dentists in the country to be licensed based solely on a portfolio of their work. In 2016, the number is expected to rise to 20. The portfolio model in California was developed as a collaboration between the Dental Board of California, the California Dental Association, professional psychometric consultants, California legislators and six California dental schools: University of the Pacific Arthur A. Dugoni School of Dentistry; the University of California, San Francisco School of Dentistry; the University of California, Los Angeles School of Dentistry; the Herman Ostrow School of Dentistry at the University of Southern California; Western University of Health Sciences Dental School in Pomona; and the Loma Linda School of Dentistry.

The model was designed as a summative assessment of competency in six key areas. Students would need to pass all six exams by showing competency with a minimum number of procedures in each area:

- » **Endodontics:** five canals completed on at least three teeth
- » **Periodontics:** 25 cases of scaling/root planing, prophylaxis and recalls that include at least five quadrants, an adult prophylaxis and periodontal surgery
- » **Oral Diagnosis and Treatment Planning:** 20 oral exams must include evidence of a patient's medical and dental history, development of problem work-up, diagnoses and alternative treatment plans when available, a definitive treatment plan that includes all or part of a patient's treatment needs, and the patient's informed consent
- » **Direct Restorations:** 60 direct restorations on permanent and primary teeth including amalgam and composite resin
- » **Indirect Restorations:** 14 crowns/inlays/onlays/bridges/cast points completed in clinical experiences may be a combination of crowns, abutments, units of fixed bridges
- » **Removable Prosthodontics:** five removable prostheses

An independent report designed to evaluate the psychometric validity of the portfolio model found that "the dental schools were able to reach consensus in identifying critical competencies to be measured in the portfolio examination, thereby standardizing the competencies to be measured and providing the

framework for the evaluation system, training and calibration procedures for examiners, and audit procedures for evaluating the efficacy of the process.”⁶⁰

Features that separate the California portfolio model from traditional one-shot, high-stakes, live-patient exams include:

- » The portfolio model is conducted in a manner similar to other clinical examinations encountered in the candidate’s course of study.
- » The portfolio examination is conducted on a patient of record during the normal sequence of treatment.
- » Readiness for the exam is determined by the clinical faculty of the institution where the candidate is enrolled.
- » Each school designates faculty as portfolio examiners and administers a Board-approved standardized calibration training course.
- » Candidate performance is measured according to standardized competency evaluations conducted in the schools by clinical faculty within the procedural program.
- » Resulting outcomes assessment data allow for verification of validity.

The California Dental Board outlined a process for selection of dental school faculty who wish to serve as a portfolio examiner. Each portfolio examiner undergoes calibration training in the Board’s standardized evaluation system through didactic and experiential methods. Hands-on calibration sessions for portfolio examiners are conducted at least annually. Sessions include an overview of the rating process, examples of rating errors, examples of how to complete the grading forms, several example cases in each of the competency areas and ongoing feedback to individual examiners. Each portfolio examination is graded by two independent competency examiners in accordance with the Board’s standardized rating criteria in forms prescribed by the Board.

RECOMMENDATION FOR AN IDEAL LICENSURE EXAMINATION

An examination with the three components outlined in ASDA's L-1 policy would ensure competency in a greater breadth and depth of skills than any currently implemented or proposed method of initial clinical licensure. Both the OSCE and portfolio have been shown to have psychometric validity.^{4,61}

In order to safeguard both the public and the candidate, the proposed examination process should occur during the course of dental school, with the portfolio portion taking place during the proper sequence of treatment on patients of record at the school. Faculty calibration may be necessary for certain portions of the examination process, though we believe a third-party evaluation is imperative to certify unbiased results. In the event a candidate fails a portion of the examination, chances for remediation should occur during the course of dental school.

As dental students and future practitioners, we take an oath to serve our fellow man and always put our patient's health and best interest before our own. The current licensure process forces us to put our own interests before those of our patients. The use of human subjects in clinical licensure examinations is unprofessional and unethical. For the betterment of our patients' lives, and for the integrity of the dental profession, we urge the stakeholders and decision-makers within dental licensure to make the change to a valid, reliable and ethical initial licensure process.

ASDA POLICY: L-1 INITIAL LICENSURE PATHWAYS

ASDA understands alternatives that are preferable to the current process exist, however the Association believes an ideal licensure exam:

- » Does not use human subjects in a live clinical testing scenario
- » Is psychometrically valid and reliable in its assessment
- » Is reflective of the scope of current dental practice
- » Is universally accepted

ASDA believes demonstration of both kinesthetic and clinical decision-making competence is necessary to obtain initial dental licensure. ASDA believes this should be demonstrated through the following:

- » Manikin-based kinesthetic assessment
- » A non-patient based Objective Structured Clinical Examination (OSCE)
- » Submission of a portfolio of comprehensive patient care

The ASDA House of Delegates adopted this policy in March 2016.

SOURCES

1. Ranney RR, Haden NK, Weaver RW, Valachovic RW. A survey of deans and ADEA activities on dental licensure issues. *Journal of Dental Education*, Vol 67, No. 10, October 2003, 1149-1160.
2. Buchanan R. Problems related to the use of human subjects in clinical evaluation / responsibility for follow-up care. *Journal of Dental Education*, Vol. 55, No. 12, 1991, 797-801.
3. Lantzy MJ, Muzzin KB, DeWald JP, Solomon ES, Campbell PR, Mallonee L. The ethics of live patient use in dental hygiene clinical licensure examinations: a national survey. *Journal of Dental Education*, Vol. 76, No. 6, 2012, 667-681.
4. Gerrow JD, Murphy HJ, Boyd MA, Scott DA. An analysis of the contribution of a patient-based component to a clinical licensure examination. *Journal of the American Dental Association*, Vol. 137, October 2006, 1434-1439.
5. Pattalochi RE. Patients on clinical board examinations: an examiner's perspective. *Journal of Dental Education*. Vol. 66, No. 5, May 2002, 600-604.
6. Gaines JH. Licensure. *Journal of Dental Education*. Vol. 57, No. 3, 1993, 221-222.
7. Abdelkarim A, Sullivan D. Attitudes and perceptions of US dental students and faculty regarding dental licensure. *Journal of Dental Education* Vol. 79, No. 1, January 2015, 81-88.
8. Laskey RE, Shub JL. Dental licensure reaches a crossroads: the rationale and method for reform. *Journal of Dental Education*, Vol 67, No. 3, March 2003, 295-300. OK
9. Meskin LH. Dental licensure revisited. *Journal of the American Dental Association*. Vol. 127, March 1996, 292-294.
10. ADA House of Delegates (HOD) Resolution 64H-2000, Elimination of the use of human subjects in clinical licensing / board examinations.
11. Elliot C. The debate on the elimination of live patients in clinical licensure examinations. Access, May 1, 2008. ISSN: 1050-0758. Accessed at: http://www.thefreelibrary.com/_/print/PrintArticle.aspx?id=179977425, 2/1/15, 12:01 PM
12. Meskin LH. 'Freshly washed little cherubs'. *Journal of the American Dental Association*, Vol. 132, August 2001. 1078-1082.
13. ADA HOD Resolution 20H-2005, Elimination of the use of human subjects in clinical licensure / board examinations.
14. ADA HOD Resolution 34-2006, Definition of curriculum integrated format.

15. ADA Council on Ethics, Bylaws, and Judicial Affairs, report. Ethical considerations when using human subjects / patients in the examination process. October 2008, pg 1-3.
16. ADEA Policy Statements: Recommendations and guidelines for academic dental institutions (with changes approved by the 2011 ADEA House of Delegates). *Journal of Dental Education*, Vol. 75, No. 7, July 2011, 957-968.
17. Licensure Overview, American Dental Association (<http://www.ada.org/en/education-careers/licensure/>), accessed: 2/8/15.
18. Friedland B, Valachovic RW. The regulation of dental licensing: the dark ages? *American Journal of Law & Medicine*. Vol. XVII, No. 3, 1991, 249-270.
19. Gies WJ. *Dental education in the United States and Canada*. New York: The Carnegie Foundation for the Advancement of Teaching, 1926.
20. Allan DL. Standardized national dental clinical examinations. *Journal of Dental Education*. Vol 56, No. 4, 1992, 258-261.
21. Kalkwarf KL. How the licensure process will evolve. *Journal of the American Dental Association*, Vol. 130, December 1999, 1737-1742.
22. Low DS, Kalkwarf KL. Assessing continued competency: an approach for dentistry. *Journal of the American Dental Association*, Vol. 127, March 1996, 383.
23. ADEX: Dental Licensing Examination Candidate Manual. 1st Edition. 2014, administered by the Southern Regional Testing Agency, Inc. Pg. 1-143.
24. The American Board of Dental Examiners Patient Based Periodontal and Restorative Sections: Candidate Manual. Administered by Council of Interstate Testing Agencies, Inc. 2015.
25. The American Board of Dental Examiners Manikin-Based Fixed Prosthodontics and Endodontics Procedures: Candidate Manual. Administered by Council of Interstate Testing Agencies, Inc. 2015.
26. Candidate Manual: American Board of Dental Examiners (ADEX) Dental Examination. Curriculum Integrated Format: Class of 2015. Administered by: The Commission on Dental Competency Assessments, 2014.
27. Candidate Manual: American Board of Dental Examiners (ADEX) Dental Examination. Traditional Format 2015. Administered by: The Commission on Dental Competency Assessments, 2014.
28. 2015 Dental Exam Candidate Guide. Western Regional Exam Board: A National Dental and Dental Hygiene Testing Agency. 2015, pg 1-74.
29. Dental Examination Candidate Manual: Class of 2015. A National Dental Examination as administered by: Central Regional Dental Testing Service, Inc. 2015.
30. Chambers DW. Objectivity is not enough. *Journal of the American Dental Association*. Vol. 91, December 1975. 1157-1161.

31. Chambers DW. Portfolios for determining initial licensure competency. *Journal of the American Dental Association*, Vol. 135, February 2004, 173-184.
32. Hangorsky U. Clinical competency levels of fourth-year dental students as determined by board examiners and faculty members. *Journal of the American Dental Association*, Vol. 102, January 1981, 35-37.
33. Chambers DW, Dugoni AA, Paisley I. The case against one-shot testing for Initial dental licensure. *Journal of the California Dental Association*. Vol. 32, No. 3, March 2004. 243-248.
34. Chambers DW. Board-to-board consistency in initial dental licensure examinations. *Journal of Dental Education*. Vol 75, No. 10, October 2011, 1310-1315.
35. Ranney RR, Gunsolley JC, Miller LS, Wood M. The relationship between performance in a dental school and performance on a clinical examination for licensure: a nine-year study. *Journal of the American Dental Association*, Vol. 135, August 2004, 1146-1153.
36. Formicola AJ, Lichtenthal R, Schmidt HJ, Myers R. Elevating clinical licensing examinations to professional testing standards. *New York State Dental Journal*, January 1998. 38-44.
37. Kane MT. The validity of licensure examinations. *American Psychologist*. Vol. 37, No. 8, 911-918.
38. Feil P, Meeske J, Fortman J. Knowledge of ethical lapses and other experiences on clinical licensure examinations. *Journal of Dental Education*, Vol. 63, No. 6, June 1999, 453-458.
39. Casada JP, Cailleteau JG, Seals ML. Predicting performance on a dental board licensure examination. *Journal of Dental Education*. September 1996, Vol. 60, No. 9, 775-777.
40. Ranney RR, Wood M, Gunsolley JC. Works in progress: a comparison of dental school experiences between passing and failing NERB candidates, 2001. *Journal of Dental Education*. Vol. 67, No. 3, 311-316.
41. An Evaluation of the Western Regional Examining Board's Dental Examination Program. January 2005.
42. The elimination of the dental and dental hygiene clinical licensure examinations as a requirement for Initial licensure within the United States. A position statement of the American Association of Dental Examiners. Approved October 12, 2001.
43. Stewart CM, Bates RE, Smith GE. Relationship between performance in dental school and performance on a dental licensure examination: an eight-year study. *Journal of Dental Education*. Vol. 69, No. 8, 864-869.
44. Graham R, Zubiaurre Bitzer LA, Anderson, OR. Reliability and predictability of a comprehensive preclinical OSCE in dental education. *Journal of Dental Education*, 2013, February (77): 161-67.

45. Meskin LH. Time for a dental board checkup. *Journal of the American Dental Association*, Vol. 125, November 1994, 1418-1420.
46. Damiano PC, Shugars DA, Freed JR. Clinical board examinations: variation found in pass rates. *Journal of the American Dental Association*, Vol. 123, June 1992, 68-73.
47. WREB: 2014 Passing Percentage: DENTAL. Updated February 2014. Requested and provided by WREB, February 2015.
48. Formicola AJ, Shub JL, Murphy FJ. Banning live patients as test subjects on licensing examinations. *Journal of Dental Education*, Vol. 66, No. 5, 605-609.
49. Chambers DW. Analyzing the sources of unreliability in fixed prosthodontics mock board examinations. *Journal of Dental Education*. Vol. 61, No. 4, 1997, 346-353.
50. Kalkwarf K. Commentary on Melnick, Pattalochi, and Formicola Papers. *Journal of Dental Education*, Vol. 66, No. 5, 610-611.
51. Council on Ethics, Bylaws, and Judicial Affairs. *Principles of Ethics and Code of Professional Conduct*. American Dental Association 2014.
52. Weaver JM. Is it malpractice for state dental boards to require competency testing on humans? *Anesth Prog* 48:53-54: 2001.
53. American Student Dental Association (ASDA) White Paper on Ethics and Professionalism in Dental Education. 2009.
54. Dugoni AA. Licensure – Entry-level examinations: strategies for the future. *Journal of Dental Education*. Vol. 56, No. 4, 1992, 251-253.
55. Chiodo GT, Tolle SW. An ethics perspective on licensure by state board examinations. *General Dentistry*. Jan-Feb 1996. 18-25.
56. Hasegawa TK, Ethical issues of performing invasive / irreversible dental treatment for purposes of licensure. *Journal of the American College of Dentists*, Vol. 69, No. 2, 43-46.
57. Lu Lau Dental Exam Consultants. <http://lulau.us>. <http://lulaudentalprepservices.com/> Accessed 2/8/15.
58. Western Dental Consultants. <http://www.westerndentalconsultants.com/about.html> Accessed 2/8/15.
59. Park SE, Anderson NK, Karimbux NY. OSCE and case presentations as active assessments of dental student Performance. *Journal of Dental Education*, 2016, March (80): 334-338.
60. Comira. Portfolio examination to qualify for California dental licensure. Comira Psychometrics Division, 2009, December.
61. Stewart CM, Bates RE Jr., Smith GE. Does performance on school-administered mock boards predict performance on a dental licensure exam? *Journal of Dental Education*, 2004, April 68(4): 426-32.

62. Howard WW. What do state dental board examinations really accomplish. *General Dentistry*, September – October 1991. 310.
63. Nash DA. Licensure based upon graduation or the real issue in protecting the public. *Journal of Dental Education*, Vol. 56, No. 4, 1992, 262-266.
64. American Dental Association, American Association of Dental Examiners Licensure Committee. Guidelines for valid and reliable dental licensure clinical examinations. Chicago: American Dental Association and American Association of Dental Examiners. 1992.
65. An Evaluation of the Central Regional Dental Testing Services National Dental Examination. July 11, 2007.
66. Yaple N, Metzler J, Wallace W. Results of the Ohio Non-patient dental board examinations for 1990 and 1991. *Journal of Dental Education*. Vol 56, No. 4, 1992, 248-250.
67. Collins W. Conflicting Interests of state boards and the public welfare. *Journal of Dental Education*, Vol. 49, No. 11, 1985, 743-745.
68. Anusavice KJ, Benn DK. Is it time to change state and regional dental licensure board exams in response to evidence from caries research? *Critical reviews in oral biology and medicine*. 12(5) 368-372 (2001).
69. Hybrid Portfolio Pathway to Qualify for Initial Licensure as a General Dentist - Fact Sheet. http://www.dbc.ca.gov/applicants/hybrid_facts.shtml accessed 8/3/2015

The logo for the American Student Dental Association (ASDA) features the letters 'ASDA' in a dark blue, serif font. The letter 'S' is significantly larger and more stylized than the other letters, with a prominent, sweeping curve that extends upwards and to the right, partially overlapping the 'A' and 'D'. The letters 'A', 'D', and 'A' are smaller and more standard in style, with horizontal lines extending from their bases.

The American Student Dental Association is a national student-run organization that protects and advances the rights, interests and welfare of dental students.

ASDAnet.org