

# The Use of Human Subjects on Dental Licensure Examinations: Fact and Fiction

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## *Abstract:*

*The evolution of the clinical licensure process for entry into the dental profession over the last few years has been unprecedented. Even as dental professionals, educators and testing measurement specialists labor over the development of new standards of reliability and validity in the clinical licensure process, there are political forces which seek to eliminate not only the utilization of live patients from the clinical licensure process for initial entry into the dental practice, but also the clinical portion of the licensure process altogether. While clinical simulation has been proposed as an alternative to the utilization of patients, much is not understood, or is misunderstood regarding the feasibility of this concept or a realistic time table for its implementation. This paper explores the relationship between the utilization of live patients in the licensure process, and the arguments advanced for its termination.*

## **Introduction**

The 141st session of the American Dental Association House of Delegates passed resolution 64H, which calls for the elimination of the use of live patients during the licensure process by the year 2005. Although the resolution passed the House of Delegates by a clear majority, it is equally unclear as to whether the dynamics of this vote reflected a genuine understanding of complexities involved.

The clinical licensure process, including the utilization of patients as a part of that process, has been the backbone of how dental professionals have been assessed and qualified for initial licensure in dentistry for decades. The realization that the citizens of a state or region should be assured that its dental practitioners are competent and qualified dates back to the early part of this century. As early as 1879 many states were creating State Boards of Dental Examiners to regulate the practice of dentistry. These state boards were mandated and subsequently empowered to serve and protect the public. Central to the thought of those early pioneers in fulfilling that mandate has been the perception that the profession of dentistry has its own unique skill sets to master, and that clinical proficiency in those skill sets are best assessed by observing the interaction and application of those proficiencies on a model which most closely emulates the manner in which those skills will be applied. In this case it is the human subject, or as is commonly described, the live patient. For the sake of this discussion the nomenclature used to describe conducting a clinical licensure examination on patients, versus computer models or laboratory based typhodonts, will be grouped under the general category of "human subjects" or "live patients". The debate on the correct nomenclature will be the subject of other discussions.

For decades the modality of licensure has included an examination conducted in part on human subjects. However, in more recent times the traditional concepts of licensure have been placed under increasing scrutiny. The impetus for this scrutiny is multifaceted and perhaps as deep-rooted as the licensure process itself. It could be supposed that from its inception there have been those who would rather that entry level examinations not be conducted, yet the vocal and political dynamic of this opposition has reached a new level of expression fueled by contemporary social and political concerns

such as access to care and the portability of the dental license. With the possibility that technology may provide a satisfactory replacement for the human subject, the opposition has crystallized and redrawn the argument from many perspectives to attempt to redefine a new licensure standard which eliminates the use of human subjects from the licensure process, and replaces it with some computer based interactive or simulated experience. The rationale advanced for the implementation of computer based licensure, versus the reality of its implementation from a technological, expense and regulatory framework perspective, will be the discussion advanced in this paper.

## **Technology**

There is little argument that the rapid advances in computer technology will redefine in the years ahead many of the traditional constructs of how students of all disciplines will be educated and trained. The discussion of educators regarding the instructive process now includes the semantics of distance learning, interactive education and computer-based simulation. Terms that were once futuristic and reserved for the most esoteric of conversation are slowly becoming the central theme in discussion of educators and professional licensing agencies as well. The development of these technologies and the subsequent implementation of those technologies must be tempered within a timeline that recognizes the difficulties inherent in weaving the desired into the practical.

The proposition and subsequent debate of where current technology stands in its ability to fulfill educational and licensing criteria is diverse. The entities invested in the transformation of education and licensure tout the future, while those empowered to educate and license are grounded in the reality of the present. While all may be supportive of the direction and opportunity that technology may present, there must be equal recognition and care exercised that the implementation of technology is consistent with its broad based ability to perform the tasks for which it is designed to replace. There should be responsible caution exercised in assessing when and how these new technologies will be incorporated into existing paradigms of education and licensure.

The present state of affairs, by many accounts, recognizes that technology is at present a useful adjunct to the traditional mechanisms of education and licensure. The present capability of that technology to replace existing constructs in their entirety has not been scientifically proven. Thus the issue becomes not a question of the present but of the future, and whether it is prudent to begin mandates for implementation when the product upon which the mandate is based either does not exist or has not been shown to be a valid and reliable replacement for the human subject. It would appear to be the more prudent course to create the technology, evaluate its usefulness, and once satisfied with its capabilities, then design a thoughtful process that speaks to timelines of implementation.

For the sake of discussion let the assumption be made that clinical simulation may someday be scientifically shown to reproduce the results garnered by the present process and thus the feasibility of the implementation of that construct within reason. The discussion henceforth will make that broad based assumption and attempt to articulate the dynamics of how implementation might occur. As a matter of semantical clarification it would be prudent to define some elemental distinctions as discussion ensues. The term "clinical simulation" shall for the sake of this discussion refer to constructs and modalities of instruction or education which authentically duplicate or emulate the clinical aspects of dentistry, dental hygiene or dental assisting. As pertains to dentistry this specifically includes the manipulation of the dental handpiece and/or adjunctive hand instruments. It must also encompass the manual dexterity skills

associated with the clinical utilization of dental materials and related armamentarium. In the assessment of dental hygiene skill sets through clinical simulation, one must duplicate the use of dental hygiene instruments such as mirror, explorer, hand scalers, sonic scalers, ultrasonic scalers, and related materials and armamentarium. The evaluation of dental assisting skill sets will involve the manual dexterity associated with the use of dental instruments pertinent to that field as well. While it is reasonable to acknowledge that dental endeavors are indeed a marriage of manual and didactic skills, clinical simulation in this context will attempt to focus on those constructs that attempt to assess for the most part clinical performance activities. The second concept shall center on the utilization of computer technologies for interactive learning. "Computer assisted interactive learning" in this context shall speak to constructs which do not require the demonstration of clinical performance activities as well as any associated manual dexterity abilities which may be required. These skill sets and their assessment have already found themselves increasingly useful in educational and licensing applications.

## **Economics**

It may be inappropriate to engage in brand name descriptors of clinical simulation technologies presently available. However, those familiar with the marketplace are informed that the prominent vendors in this area are marketing a clinical simulation technology which proposes to simulate the dexterity aspects of dental handpiece utilization. The economic investment in the hardware alone approaches the \$60,000 range. Further inquiry will reveal the ancillary costs associated with this technology such as software maintenance, software updates, training and additional space requirements. Suffice it to say that total costs may well exceed the basic introductory expenditures into this technological field. It is as yet undetermined as to how many clinical simulation units may be required to adequately move the student educational process into clinical simulation technology. Educational institutions appear ill prepared to make this assessment, and conversation appears to indicate genuine frustration within the educational community with finding the necessary funding to address existing clinical educational needs. Of the schools presently utilizing computer simulation as part of the educational process, such as Pennsylvania and Tennessee, the numbers of simulators purchased has varied considerably from two to thirteen respectively. The question of the number of clinical simulation units required to adequately establish a testing process utilizing clinical simulation becomes infinitely more complex.

Clinical licensure examinations for any group or state are currently structured to be conducted and completed within a relatively short time frame, usually two to a maximum of four days. The number of candidates examined at any one session can vary from as few as twenty to as many as several hundred. For example, Florida reports in the ADA 1999 Survey of Clinical Testing Agencies that its December 1998 examination tested 228 candidates, while the March California examination of that same year tested 239 candidates. Regional testing agencies conduct more tests at a number of different sites, on a greater number of candidates; however, the average number of candidates tested at each test site is lower. In 1998 the North East Regional Board of Dental Examiners, Inc. administered 42 examinations and tested 3,312 candidates, or an average of 78 per examination.<sup>1</sup> Since there are no existing protocols yet established to delineate how a clinical simulation examination might occur from either a protocol standpoint, or a breadth of clinical experience standpoint, it would be more conjecture than fact to attempt to ascertain how time consumptive a clinical simulation examination might be. On the one hand it would seem appropriate to construct a reliable, valid, and comprehensive clinical simulation examination which was designed to

measure the depth and breadth of the clinical performance experience, and then let the time element fall where it might. The reality is that time restraints will craft the nature of the clinical simulation examination more than coverage of clinical skills.

The present clinical examination process typically has a diagnosis and treatment planning portion, a restorative portion consisting of an amalgam preparation and amalgam restoration, as well as a composite preparation and composite restoration, and a clinical periodontal portion, if not dental, then certainly on the dental hygiene examination. Many examinations continue to have a gold casting preparation and restoration as well. An average time dedicated to the performance of the clinical portion of traditional licensure examinations incorporating the demonstration of manual dexterity skills could well approximate six hours. Using the state of Florida statistics for the December 1998 Examination in Dentistry, 76 simulators would have to be available over a three day period to assess the 228 candidates for licensure at an initial investment of approximately four million five hundred and sixty thousand dollars (\$4,560,000.00) for hardware costs alone.

The difficulty that most dental schools will encounter in the implementation of this technology is that their sources of financial support are heavily weighted toward federal and state legislature appropriations. According to the American Dental Association 1999/2000 Survey of Predoctoral Dental Education thirty six (65.5%) of the dental schools in the United States were classified as public, compared to 14 (25.5%) as private, and five (9.1%) as private-state related.<sup>2</sup> Thus, initial evaluation would suggest that the majority of dental schools are public in nature and will therefore seek revenues for the purchase and maintenance of computer simulation technologies from their state and local governments. Inspection of the fiscal years of 1997, 1998 and 1999 reveals that state and local financial support over those years has been 32.9, 32.0 and 31.6 percent respectively, with concomitant federal support representing 10.1, 10.1 and 9.4 percent of total revenues received by the 55 United States dental schools and the 10 Canadian schools questioned in that same survey. Total revenues of all dental schools sampled exceeded \$ 1.5 billion in Fiscal Year Ending 1999, with contributions from state and local governments representing (\$453.9 million) 31.6%, student tuition and fees (\$406.5 million) 26.8% and dental care clinics revenue (282.4 million) 18.6% respectively.<sup>3</sup> The economic reality is that the costs of providing a dental education are increasing yearly with a 6.2% increase in expenditures of those dental schools sampled from fiscal year 1998 to 1999.<sup>4</sup> While statistically the burden of the dental education has fallen upon state and local governments, the ability of states and local governments to meet the current financial needs of its educational systems is under extreme pressure, and many states find themselves in difficult budgetary times. The additional revenues needed for the implementation of clinical simulation as an educational concept may not be forthcoming from state and local government sources. Appeal can be made to federal governmental entities for increased support; however, the relative percentage contribution of the federal government to the total revenue stream would require that federal governments are willing to reconsider the traditional expenditures invested into dental education. Federal government sources of revenues represent approximately 10% of the operating revenues required by the dental educational systems, and the horizon yields little promise that federal initiatives to fund simulation educational processes will be forthcoming, especially when any federal initiatives may well be aimed at increasing class sizes in an effort to address access to care issues rather than changing traditional educational constructs.

The agencies presently conducting licensure examinations fall broadly into two categories, regional testing agencies and state or independent testing agencies. It is unlikely that independent testing agencies could invest heavily in the technological

hardware required for clinical simulation due to economic constraints. The feasibility that regional testing agencies, or joint ventures among various regional testing agencies, might find economic resources to develop a mechanism for clinical simulation licensure is conceivable. Problematic to this concept however, is the low transportability of present clinical simulation technologies. As these regional examinations are given at many sites, at a number of dates, the logistical concept of multiple simulators being transported as part of the licensure process appears overwhelming.

Joint ventures and economic liaisons between educational facilities and licensure entities might allow the technology to reside in the educational facilities of the states comprising each testing entities service area. Such an arrangement might allow both groups to share costs while devoting resources to advance the software and grading systems applicable to each group's purpose. The politics and security involved in maintaining an ongoing joint venture might prove unmanageable, but if all differences could be overcome, it would provide a mechanism to overcome possible resource restrictions. There still is a problem of the independent states, which at present, still conduct a significant portion of the clinical licensure exams given. In fact, of the approximately 15,093 dental and dental hygiene licensure exams given each year, 4,914, roughly one third are given by independent testing agencies. Large independent states such as California and Florida which test 2,250 and 1,100 dental and dental hygiene candidates respectively, may find the economics of simulation prohibitive if the economic burden of simulation should reside upon their state legislators approval and funding.

The discussion of generating revenues and the source of those revenues will eventually include the student tuition and the potential revenue realized from those sources. Review of the ADA 1999/200 Survey of Predoctoral Dental Education reveals that the average first- year tuition costs in United States dental schools for 1999/2000 amounted to \$15,114 for state residents and \$23,567 for non-residents. Mandatory general fees for first year students, regardless of residency, averaged \$941 while other first-year educational costs averaged \$6,340. From 1998/99 to 1999/2000, there was an increase of 5.4% in the average non-resident tuition and fees, and a 4.1% increase in the average resident tuition and fees.<sup>5</sup> The trend for increasing costs to the dental student for a dental education is already apparent. During all their years in dental school, current students spend an average of \$65,057 on resident tuition, fees, and other educational expenses and \$94,625 for non-resident tuition, fees and educational expenses.<sup>6</sup> From the 1991/92 academic year until the 1999/2000 academic year the expenses relative to tuition and fees have risen an average of 6.0% per year for residents and 6.7% annually for non residents.<sup>7</sup> The impact that computer simulation will have on that trend is yet to be resolved. Argument can be advanced that the revenue required to fund computer clinical simulation will come in part from increases in student tuition and fees, adding to the already burdensome educational debt that dental students are carrying into their entrance into the dental profession. This debt is already affecting the career choices that young professionals are having to make in order to deal with the mounting debt of the dental education. These choices may tend to impact on the ability of young professionals to entertain career decisions that impede repayment of that educational debt. Service to underserved populations, which traditionally remunerate at lower than marketplace reimbursement rates, may be affected as students pursue more traditional forms of professional engagement.

An additional consideration in this discussion regards the revenue stream generated from patient care in dental schools. Statistics are available for the numbers of patients screened by dental schools on a yearly basis, and for the number of actual patient dental visits for the same period. Although the number of patients screened has

remained between 5,900 and 6,500 for the past five years, the number of patient visits has decreased since the 1995/96 high of 62,407, reaching the low of 59,291 in 1999/2000.<sup>8</sup> Of the \$1,517,981,020 dollars total revenues received by all dental schools, \$198,878,530 was generated by student clinic fees.<sup>9</sup> When compared to 1999 total federal government support revenue sources of \$144,090,504 (10.1%), it becomes pointed that the impact of student clinic fees on the operational budgets of dental schools is significant. If computer simulation supplants traditional patient clinical contact, combined with the trend toward less patient clinic visits prevalent in dental schools nationally, the concomitant revenue stream so generated will be diminished, and the economic impact of computer simulation only exacerbated. Additionally, the trend toward diminishing patient visits may be reflective of a diminishing student clinical educational experience, and related diminishing practice preparedness and subsequent performance on traditional clinical licensure examinations.

### **Computer Simulation Limitations**

The evaluation of the dental student and the dental hygiene candidate through the licensure process has been the result of years of refinement. Recent efforts in assuring that principles of validity and reliability are strongly documented in the licensure process have been unprecedented. Licensure community joint efforts such as the ongoing Best Scoring Practices and Post Examination Analysis meetings, will advance the science of clinical licensure testing to a new standard. One of the central themes of the measurement specialists in attendance at that meeting is that the clinical licensure process should involve testing a broader array of the skills inherent to the profession. Future clinical licensure examination models will surely reflect this trend.

Present computer simulation technologies have not evolved technologically to test the broad array of skills inherent to the dental profession. While the leading available technologies purport to have assessment capabilities to measure restorative dentistry preparations, they presently lack the capability to assess the final restoration of those preparations. Educational models of computer simulation as well as licensure models which might utilize computer simulation, must present with the capability to measure the candidate's ability to properly restore teeth to a mechanical, functional and esthetic standard. Until that capability exists in computer simulation, as a technology it falls short of meeting requirement for clinical licensure testing and assurance to the public that qualified and competent practitioners are being allowed licensure.

As to testing the broad scope of services rendered by dentists and dental hygienists, there does not appear to exist a modality to assess periodontal clinical skills. Additionally, skill sets involving exodontia, prosthodontics, endodontics, or other elemental basic dental skill sets have not found their way into computer simulation technology. **Measurements of operative cavity preparations alone is not a sufficient indicator of candidate preparedness to enter the general practice of dentistry.**

### **Standardization and Calibration**

Perhaps one of the main enigmas of the computer simulation doctrine involves the issues of calibration and standardization. The clinical licensure community is diligently attempting to define and refine the standards by which practitioners should be assessed. Though agreement on calibration and standardization is rapidly evolving among the diverse members of the licensure community, there is still at present much to be forged until a uniform national consensus is reached. The right of each state to

articulate its own testing and regulatory standards is still deeply embedded in each state's legislative authorities. In essence it is still the sovereign right of each state to establish the standards by which practitioners will be judged and allowed licensure. The difficulty is developing program materials unique to each state, and /or to each educational facility has yet to be articulated. Presumably the standards of critical competency, minimal clinical competency, or safe beginner skill sets will be consistent between the educational systems and the licensure agency associated with that system, but consensus in that regard is not proven nor tested. Additionally, standardization and calibration between educational institutions, and among individual faculty members themselves of those institutions, has not advanced commensurate with those efforts of the licensure community. Demonstration and recognition of standards for computer simulation on an intra-educational level, and an inter-educational level is prerequisite in the process of broad based computer simulation implementation. **The issues of standardization and calibration in the clinical licensure examination process, and the recognized accomplishments in that area, must be in place for computer simulation as well, prior to its implementation.** The computer box must be open and the contents therein evaluated to determine and assess the criteria and scoring mechanisms in place used to render the final candidate score. These scoring mechanisms and the criteria upon which they are based must be analyzed for content, bias and a multitude of other parameters. The methodology and criteria of scoring must meet at least as rigorous analysis if not more so than the existing patient clinical based examination. Of course, the hardware must be in place, the funding appropriated, and the commitment of individual state legislatures to the process guaranteed before these evaluations of scoring and criteria are initiated. Although time consuming, this is not necessarily an insurmountable task; however, it is a task prerequisite to consideration of elimination of the existing live patient based licensure process.

### **Security and Variability of Examination Materials**

There will be a host of concerns and concepts needing to be addressed prior to the functionality of computer simulation as a viable replacement to the traditional live patient clinical licensure process. Needless to say, there are as many potential unknown problems as those that insight might uncover prior to implementation. Certainly, one of the known concerns will center on security related issues. The programs utilized for educational purposes and the programs utilized for licensure purposes will have inherent similarities and inherent differences. While educational programs may be structured to instruct interactively, the licensure process will be more structured toward strict assessment of skill sets with little instructional prompting. Once, the program materials for each entity are established, safeguards are needed to insure that the program materials unique to the licensing community are secure. Efforts to obtain examination information prior to actual testing are legendary. The ability to secure computer based information against the unauthorized is only as good as the most recent firewall, and as equally fragile to the next generation of computer hacker. Entry or access to computer based technology prior to an examination session could invalidate that session's results for all candidates taking the examination, and require immediate re-programming and restructuring of examination materials. One of the inherent difficulties with computer simulation will be that all candidates will be uniquely tied to one common thread of assessment. Failure of that technology to remain secure, or failure of that technology to perform, will impact all candidates. There is an important distinction to be made here to the traditional patient clinical examination process where each candidate's performance was relatively independent of another candidate's. Failure of the overall patient based

clinical examination is unlikely as each candidate demonstrates proficiency on his/her own patient and in essence his/her own test. While each of these patients may be linked by patient acceptance criteria, and thus will represent similarities in clinical presentation, the failure of one patient as a test component or one aspect of the candidate-patient interaction, does not have catastrophic consequences for the other examination candidates. Breach of security and integrity of computer program material could indeed have catastrophic results for the body of candidates at an examination site.

The potential for breach of security is certainly not a lone issue in test construction. Another equal concern will be familiarity of exam content and dissemination. As candidates take the simulation exercises, either from site to site (inter-site) or from day to day within one site (intra-site), the program material, test construct, and scenario of case presentation will become increasingly disseminated knowledge. In a patient-based clinical examination, this issue is minimized as candidates are graded upon criteria and how that criteria was applied to their patient. The ability of simulation to create the diversity of the live patient may begin to become problematic in keeping the simulation examination construct current and creative. The simulation of today may quickly lose its challenge to test candidate performance as the "game" is learned and information regarding "game performance" is transferred from candidate to candidate. Today's computer simulation and cutting edge technology quickly, like our children's computer games, becomes tomorrow's Pac man. The race to stay ahead of the candidate's ability to master the game will create a whole new industry. While by itself not alarming, this could be economically challenging for educators and licensure communities to absorb.

The live patient examination endures time. It is not a simulation which requires continued maintenance and evolution. It is the essence of what practitioners do on a daily basis in its purest form. It does not attempt to construct anything it is not, as it represents itself perfectly in its elemental form. Variances in the patient are not failures of technology but presentations of reality of private practice and the "real world". There is no need to attempt to reprogram or reconstruct the live patient, as Mother Nature provides an endless supply, programmed at her pace with her wisdom and guidance.

### **Replacement Costs**

As the game changes, the programs which define that game must change. The programming costs associated with continual updating and enhancement will be considerable. The real expense will be the periodic "retooling" of the computer simulation software. Once simulation is implemented on a broad basis, it will be difficult to revert back to traditional methodologies of dental education and professional licensure. Present office and home computer technologies have a definitive life span before new technology and changes in software requirements mandate hardware replacement. Little is yet known regarding the durability of the technology under continued educational use. If this technology is consistent with other computer technologies, three years of usage may be a reasonable rule of thumb before replacement of hardware is required. Educational institutions and licensure agencies may find this periodic retooling economically unpalatable.

### **Appeals Process**

Licensure agencies are only too aware of legal requirements for candidate review and appeal of the clinical licensure result. Much has been stated regarding the need for review and appeal and most all licensure agencies offer some form of post examination

candidate appeal process. What has not been discussed in the implementation of computer simulation is how an appeals process will be structured. Arguably, the candidates' performance may be stored as part of the test record and then reviewed at a later date. The legalities of candidate review should be thoroughly discussed by competent legal counsel prior to wholesale utilization of computer simulation.

### **Perceptions and Misperceptions**

The politics of computer simulation have vastly outpaced the technology of computer simulation. The arguments presented for its implementation have been endorsed by those whose agendas speak to portability of the dental license, constitutional right to freedom of movement, and economic concerns rather than concern with public protection and the assurance of qualified and competent practitioners. It is the duty and mandate of the licensure community to assure the public that the dental practitioners licensed to render patient care in its state are minimally clinically competent and capable of exacting their trade and profession on the public without harm.

The discussion being heard from those in opposition to the traditional live patient clinical licensure process has risen to a new level of the preposterous. Publications and media relate statements from the "anti patientists" that to use a patient during the licensure process is "barbaric" and equates the candidate performance during the licensure process as "to experiment on live human subjects". Recent state legislation even ventures further to state "the dental licensing examination still requires live human beings to be used as guinea pigs for the people taking the examination". And if that isn't enough, the verbiage of "abuse" and "experimenting on a human being" continues as a theme in these and other discussions.

There must be a long moment for pause as these arguments are being advanced, and even the moderately informed must stop and inquire as to what this abuse and experimentation is all about. Well, those that commit barbaric acts are by definition barbarians, and those who needlessly experiment on human beings worse. But, certainly it would be irresponsible and inappropriate for those comments to be applied to the candidate sitting for clinical licensure examinations. Surely, after these dental candidates have been certified by the Dean of the dental school they attended as having successfully completed an accredited program of dental education and training, performed clinical procedures daily for two and three years as part of the educational process, and further certified that are ready for graduation and the clinical licensure examination performed on live patients certainly, these cannot be the barbarians of previous discussion.

What is genuinely hoped by all, especially the educators, is that these young men and women represent the pinnacle of dental education and training. They represent the best and brightest and will uphold the ethics and morality of the dental profession, as have those before them. They have spent years of study preparing for entrance into their life long profession and have just completed a clinical course of instruction that will serve as the foundation to a life long learning experience. To classify these individuals as barbarians is unjust and does a tremendous disservice to the educational process.

These are the young men and women that, regardless of the licensure process implemented, will be providing dental treatment to the citizens of the state at their very first opportunity. Many will graduate from dental school in late May, pass a licensure examination in early June, and be practicing their profession on the general public in a matter of days. How then is the execution of their trade and expertise in a licensure process barbaric and experimental, when the previous three years of education and training have not been? How does the licensure process on Thursday, Friday and

Saturday constitute experimentation on human beings, when the next Monday morning that same candidate arrives at their new profession with a busy schedule expected to perform their trade and often those very same procedures performed in the licensure examination, to at least a minimal level of clinical competency? The debate over this issue would be better served to stay well grounded in the reality that the central tenant to the licensure process is that these individuals are at least theoretically prepared to assume practice on the general public, and subsequent to the licensure process, may soon be our new fellow practitioners.

## **Politics**

The push toward clinical simulation replacing the live patient does not appear to have been deeply thought through in terms of cost, technological capability or implementation. What can be said of that push is that the impetus is fueled by the political agenda of the American Student Dental Association (ASDA) who openly acknowledges on its web site that “Graduates of dental education programs accredited by the Commission on Dental Accreditation should not be required to pass a clinical licensure examination in order to be eligible for initial dental licensure in any jurisdiction of the United States” and “until such time as clinical licensure examinations are no longer required for initial dental licensure, the American Student Dental Association endorses elimination of human subjects in clinical licensure examinations”. Concomitant with the elimination of the live patient or human subject from the licensure examination is the ultimate goal of elimination of the licensure process completely. Without doubt the preference of ASDA would be that graduation from an approved educational facility alone would be a sufficient qualifier toward entrance into the profession.

## **The American Dental Educators Association**

There are several inherent difficulties embodied in the goals pursued by the proponents of elimination of the licensure examination. One of the observations immediately apparent is that there are many individuals who graduate from educational facilities who fail to pass licensure examinations in several states, upon multiple attempts. Evidence is easily constructed to demonstrate that for whatever reason, it is a reality that clinically unprepared individuals can find their way through current dental educational systems and graduate. While many within the educational community find exception to this observation, there is increasing acknowledgement that this condition is not conjectural.

The American Dental Educators Association (ADEA) has not been immune from the demands of the students they are entrusted to educate. Fear of litigation has virtually eliminated the dismissal of the dental student for clinical ineptitude, ethical or academic reasons. While remediation is a humanistic approach for the less adept student, remediation carries with it a duplex of economic problems for the educational system and thus it has apparently fallen from grace. The educational system has found itself placed in a compounded economic problem of legally defending policy decisions which would require remediation, and once remediation programs are established, finding the necessary funding for the program from existing revenue dollars. Professors at educational institutions quietly acknowledge that for many reasons students are promoted without the possession of adequate clinical skills. Seasoned dentists complain of the lack of preparedness of the new graduate to assume treatment of the general public. New graduates in record numbers seek further training through post graduate

programs before feeling competent to enter private practice. Many indicators appear to speak to the current level of new graduate un-preparedness; however, the universal reply of dental school administrators continues to proclaim the validity of the educational process, and the quality of the new graduate. The licensing boards through the clinical licensure process have previously served as the fail-safe mechanism to the political dynamic and reality of a compromised educational assessment process. Educators who deal with clinic floor realities, concerned general practitioners, and the public can be presently comforted that independent third party licensure safe guards are in place to address the issue of competence and identify the unprepared.

The assumption for elimination of the human subject based clinical licensure examination, or of complete elimination of any type of examination, is that all graduates of dental schools, are by virtue of that graduation, competent, qualified and capable dental practitioners. Unfortunately, this fact is far from true, and it still remains the objective of licensure examinations to identify those in need of remediation and additional training, prior to those individuals being allowed unsupervised practice on the general public. Should momentum gain to eliminate entry level licensure examination, then it would be equally incumbent on the public and those who represent the interests of the public, to conduct thorough and continuous inquiry and oversight of the clinical and didactic abilities of the students graduating from the dental educational systems. To effect that oversight would require an in depth assessment and measurement of the product of the educational process and to effect a comparative mechanism to measure which institutions are producing a quality product and which are not. The increased scrutiny of the dental educational product and the educational process itself will be an absolute precursor to consideration of elimination of existing licensure processes.

Central to the theme of dental student preparedness are the perceptions that grade inflation may well attribute to the lack of educational oversight and assessment. While some educators ardently defend the educational process, others acknowledge that perhaps faculty pressures diminish the capability of accurate assessment.

### **The American Dental Association**

And thus the reality of the momentum of these efforts to undermine the clinical licensure examination lies not in defining what is best for the public, or what best protects the public good and assures that only competent and qualified individuals may enter the practice of dentistry, but instead the impetus apparently partly lies in an attempt to placate a targeted source of potential new dues payers. Opinion abounds that the ADA has concern regarding its diminishing membership base and its potential economic impact. Germane to the economic interest of the ADA is the recruitment of dental students and new dentists into the ADA and the dues they represent. That these new dentists bring with them agendas and demands has been well demonstrated and referenced in their published platform and position. Freedom of movement and freedom from licensure examination, as agenda items, have moved from the literature of the ASDA to the forefront of the ADA agenda. Although ADA rhetoric does embody constructs which speak to protection of the public, membership recruitment may well be shaping the political line of the ADA and appears to have taken on the role of primary importance. Consider testimony given in the Reference Committee Meeting supporting the introduction of 64H to the ADA General Assembly as a committee member states "When we look at the retention and recruitment of members, there is probably nothing that we can do for our young and graduating dentists that would have greater meaning than passing this substitution (resolution 64H)."

But while this is an issue of recruitment and retention for the ADA, this is not an issue of retention and recruitment for the general public. Rather, this is an issue which simply says that when our mothers, fathers, sons and daughters walk into a dental office in this nation, the dentists or dental hygienists providing that dental care have demonstrated proficiency in the delivery of dental care to a regulatory body charged solely with the protection of the public. Issues regarding recruitment of new members and the dues those members bring should not enter into this discussion. While the recent dental school graduate bemoans the inconveniences of clinical licensure examinations, those inconveniences pale in comparison to the need of the public to be assured that only competent and qualified dental practitioners are granted licensure. And while the inconvenience to the student makes for interesting philosophical debate, it again pales in comparison to the potential impact that an incompetent entry level practitioner may exact upon the general public if that practitioner lacks the basic skill sets to begin entry level practice.

### **The American Association of Dental Examiners**

The American Association of Dental Examiners (AADE) has for over one hundred years served as the national representative body of the licensing and disciplinary authority granted to each State Board of Dental Examiners, by that individual state's Legislature. The Legislatures have directed that the focus and mandate of those boards should be the protection of and service to the citizens of the state. This mandate of public protection and service to the citizens, can at times contrast sharply with the effort of the dental profession's leadership to advance causes of the profession. Certainly, there are many times when the needs of the profession are consistent with the licensing agencies' mandate of protection of the public, and it is beneficial to work in harmony for the greater good of all. There are, unfortunately, other times when the agenda of the ADA and/or the American Dental Educators Association (ADEA) moves in directions which are in essence self-serving and which would leave the ability to serve and protect the public diminished. These occasions must be recognized and great effort expended to preserve the fundamental balance that is essential to the process. The basic right of the citizens of each state to have dental professionals who are competent and qualified, must be protected and maintained with all fervor. What is unbecoming is when any entity embraces ideology for economic incentives and reward, with concern for the public well-being as a secondary consideration.

### **The Ironies of Argument**

There is irony in this story, and the ironies and dichotomies of thought process are never ending. Let it not be lost that the ADEA and ADA have advocated the extensive standardization and calibration of dental examiners as essential to fairness and accuracy in the evaluation of the dental student, while maintaining an almost belligerent resistance toward implementation of the same standardization and calibration methodology of their dental school faculty and educators. Doesn't it stand to reason that dental students should have a consistent standard of grading from the beginning of their educational process until their passage into private practice? The licensing community should encourage the educational community to uphold the same standards that they recommend.

While critical of the use of the human subject for licensure examinations, the ADA and the AADE continue to acknowledge the necessity of human subjects for beginner, intermediate and advanced level clinical instruction in dental schools. There

are not to date any graduate residency programs being conducted solely through simulation. There has been no denial of the necessity of the use of human subjects in the educational process. Oddly, the ADSA considers the use of human subjects in the examination process of fourth year dental students ready for private practice “barbaric”, yet those same students seem to harbor no such similar sentiment regarding the clinical instruction received during their educational process, and their initial un-experienced educational dental relationships with their first human subjects.

Finally, the ADA and students lobby for pre-graduation licensure examinations so that failures will have time for remediation prior to the official graduation date, and argue that remediation identification is important for the student in the development of their clinical skills prior to graduation. How then does one suppose that the perfectly trained dental student, identified by the dean of the dental school as ready for graduation and additionally certified as competent to treat human subjects on licensure examinations, requires remediation? It is difficult to follow the logic that students ready for graduation are unprepared, either educationally or through their own volition, to pass an entry-level examination assessing skills critical to the safe practice of dentistry.

And thus we arrive at the most interesting proposals yet ventured by opponents to the clinical licensure process, which is that even “good hands can have bad days”. Well, no one supposes that all practitioners are perfect in every regard, in every procedure, every day. To speak to this issue as “good hands can have bad days” is simple minded and uninformed. As a point of practicality, having numerous “bad days” in the dental office can seriously impact a professional’s stability, emotionally and economically. While this is demanding of student and seasoned practitioner alike, it is a truism of this profession that dentists are expected to perform consistently to a recognized standard of care. Additionally, these entry level examinations are designed to test to the “safe beginner level” or often described as “minimal clinical competency.” In actuality, “minimal” competency is a misnomer. Candidates for licensure are assessed as to “critical” competency, i.e. whether the candidate has a basic understanding and the skill to do no harm to his/her patient in critical conditions or situations encountered in the daily practice of general dentistry. Failure to satisfactorily pass an examination based on minimal (“critical”) clinical competency seems to diminish any logic embodied in the “good hands, bad days” mentality, as every student and every practitioner should be continuously practicing at a minimal or critical level of competency at all times, even on their worst of days.

There may be a time when the dental schools produce perfect ideal dental students well advanced in their clinical skills, and when that day comes the need for clinical licensure examinations may well be more of a political function than a protective reality. There may be a day when clinical simulation recreates the nuances and particulars of dealing with the human subject. That day is not here. If and when it occurs, there is still the elemental fact that the ADA, in being faithful to its principles of ethics and code of professional conduct, should be supportive of a valid and reliable examination and licensure process that protects the safety and welfare of the public. The construction and subsequent administration of that licensure examination is a function of the dental boards of each state whose mandate it is to serve its citizens. It should not be delegated to the ADA whose function is to serve its professionals and their desires, nor should it be delegated to the ADEA whose principle mandate is to educate and prepare their students for entry level practice.

## **Summary**

In closing, it is time to assume a realistic and responsible approach to licensure. The time may come when clinical simulation may provide a viable alternative to the traditional human subject based licensure examination, but that time is not yet upon us, and mandates will not alter that fact. When clinical simulation exists at a level that reproduces the assessment capabilities of the current clinical licensure process, then let the examination community, whose mandate it is to oversee licensure, develop appropriate protocols, conduct its measures of validity and reliability, establish standards for calibration and measurement, and be allowed to fulfill its duty to protect the public in a comprehensive and responsible manner.

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