

# Journal *of the* American College *of* Dentists

Oral Health and  
Dentistry in  
Other Countries

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# Journal of the American College of Dentists

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and leadership in dentistry**

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- C. To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;
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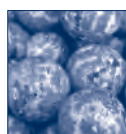
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Cover image: Many worlds of dentistry.

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## From the Editor

### Degrees of Freedom

A message one has not yet fully and properly ignored is an opportunity; a reminder converts that into an obligation. Opportunities are degrees of freedom; obligations are reductions in degrees of freedom.

It has likely not gone unnoticed that the digital age has changed the balance between message senders and receivers and the very nature of what we used to call conversation. We are no longer in the information or discussion age. We are in the attention and messaging age. It has become so cheap to send a message out, relative to reading one, that hitting the SEND key is now taken as the equivalent of communication.

Degrees of freedom is an arcane statistical concept. Perhaps you have noticed something like  $\chi^2 = 14.34$ ,  $df = 3$ ,  $p < .01$  in the research literature. But it is unlikely that the  $df$  part was a show stopper. The basic idea is to quantify how many ways the experimental result might have occurred. If there are more potential causal factors or if there are several alternative explanations, the degrees of freedom increase making more compelling results necessary to convince us that any of them is worth paying serious attention to.

The way the question is framed can help structure or constrain the challenge of finding out what is really going on. Life is one big Sudoku game, and the more degrees of freedom, the harder it is to win. If there are too many ways to work a solution, the game becomes a

hypothetical abstraction and loses its interest. Managing the welter of available information in the digital age has become a challenge of getting the degrees of freedom to behave themselves.

A successful life entails balance in the number of degrees of freedom.

A colleague and I just had a paper published in the *Journal of Prosthetic Dentistry*. We videotaped dentists “reading” a journal article on fabricating a high-end anterior provisional restoration. Dentists used pictures and their knowledge of the dental procedure to guide their reading, and they looked at and maintained interest about as long as the piece provided new ideas useful to practice. The big surprise was that 80% of the readers expressed fault with the paper without having been asked to judge it. Usually the suspicions were hypothetical, “This work *might* have had commercial backing,” “*Perhaps* it was not a sufficiently powered RCT,” and so forth. Readers spontaneously built a protective barrier between themselves and the results just in case. And in a deeply ironic twist, the more personally valuable they said the results were, the more readers distanced themselves. Have you ever noticed that the first ones to respond to a dinner invitation are those who say “Would love to come, but Lovey and I will be in Paris for the International Congress on Really Important Stuff”?

Degrees of freedom are a personal protective barrier.

Years ago I checked the websites of major dental supply companies and found that several of them listed the position of Chief Ethics Officer. A few phone calls to HR made it clear that the names of these individuals or what they do were not to be made public. The web pages virtually screamed that these were ethical organizations. Many are telling us today how we should feel, but few are willing to discuss why. Manipulating degrees of freedom is often performed under a blanket of confidentiality or proprietary interests, and you can take my word for that.

Degrees of freedom represent control.

When I was fitted for hearing aids, the technician beamed that these super-duper gadgets featured a toggle switch that enhanced various contexts. There was a setting for small groups, large groups, music, and TV. I declined the latter and asked if I could have a setting that only allowed me to hear positive comments while screening out the stupid things people say. That only prompted a wry but hopeless smile. I can do it on my smart phone, however.

Privacy matters. But sometimes that means we want to selectively control what others learn about us. A message one has not yet fully and properly ignored is an opportunity;

a reminder is annoying because it converts that into an obligation.

I read a nice philosophical paper by an individual I had met when I was a visiting scholar at Cambridge and, as is my habit, I thought I would drop him a note of appreciation. I am pretty good at tracking folks down, but this was a challenge. Finally, I found an online notice from him that said “I have chosen not to communicate with anyone. My e-mail address and phone number are strictly private. If you attempt to communicate with me through the departmental secretary, I will retaliate.” He still broadcasts his opinions; he just won’t listen.

The more degrees of freedom we have, the less we are subject to influence by others.

A few years back I ran into problems with friends who had hyperactive spam filters. There was also a brief flurry of software that required one to reveal some personal information before the recipient decided whether to let you say anything. This has pretty much gone away, replaced by just ignoring what we are not interested in. That is so much easier. If someone wants to get in touch with me they will ask several times, provided they make it more flattering each time.

In the 25 years I have been on the Board of Regents of the College, there have been very few meetings where we did not discuss our relationship with another organization that is a partner

in our annual convocation. Like all partnerships, there are not enough resources so everyone can have everything desired, and each party tends to feel it is giving more and getting less than deserved. Unlike most partnerships we have never been able to sit down at a common table and hear each other out. Perhaps control of degrees of freedom is being attempted to avoid having an open two-way conversation. Organizations play power communication.

The fewer degrees of freedom we can leave for others, the greater our power.



## Readers Respond

### Letters to the Editor

#### TMD, Evidence, and Ethics

Editor, *Journal of the American College of Dentists*:

I commend Drs. Brown and Greene on their essay, “Ethical Considerations in the Management of Temporomandibular Disorders” which appeared in the fall 2017 issue of this publication. I concur with their position that reversible modalities should be the first line in the management of TMDs.

It is not clear, however, what constitutes “conservative and reversible modalities” in the essay. While the current preponderance of literature supports orthotic therapy when appropriate, clarification of the characteristics of those appliances that are effective and which are not remains nebulous, and further high-level research is needed to clarify and support these preferences. It is important to clarify that the use of medication, psychological intervention, etc., are not necessarily “irreversible” or “less invasive” either.

Ethical care cannot be based solely on the literature, which in the field of TMD management, remains fraught with challenges. Yet, Drs. Brown and Greene seem to be making a bold statement that only “the preponderance of evidence” should guide treatment decisions.

There are multiple examples where strict adherence to Cochrane standards for research is problematic

in practice and harms the practicing dentist because insurance companies and plaintiff attorneys apply the standards without reference to context. Antibiotic premedication for SBE and joint replacement surgery and oral cancer screening have both had multiple review articles published in peer-reviewed publications debunking their necessity. However, in the reality of clinical practice, orthopedic surgeons still tend to dogmatically recommend premedication and are extremely vocal about it. This creates an ethical dilemma because it is my obligation to make evidence-based recommendations according to an understanding of the current dental literature; but this also forces me to practice medicine without a license and accept responsibility for infected joints. With oral cancer screening, while the evidence may not show that oral cancer screening is effective, I can guarantee that if you don’t screen and cancer is missed, you will be a sitting duck in court.

When phrases like “preponderance of literature” are used to describe only high-level studies, or only those that meet Cochrane standards, this is disingenuous at the very best. It implies that those practicing in areas where multiple studies that meet standards for methodological rigor are yet to be published are practicing unethically. I would argue that many independent lower level studies that are well designed may, in actuality, carry more practical weight than formal high level generalized studies

because they may likely better address clinical reality.

As a member of a profession that touts ethical care of its patients, I am frustrated that the foundational principles of evidence-based dentistry, as clearly outlined by the American Dental Association, are often distorted, by focusing only on high-level, multi-centered research that meets the Cochrane standards while dismissing most of the foundational lower level research publications thus devaluing the clinical expertise of the clinician and the desires of the adequately informed patient. Dentistry is both an art and a science. Those two foundations of practice must be integrated.

*Kevin D. Huff, DDS, FACD*  
*Dover, Ohio*

#### Reply on behalf of Drs. Brown and Greene

We thank Dr. Huff for his comments on our recent paper. We agree that we did not provide a comprehensive list of all forms of conservative and reversible treatment options for various TMD conditions. Such treatment options can be found within the references of our recent paper and in these two major guideline publications referenced below.

However, it is clear that Dr. Huff wants to focus on occlusal issues, which he correctly identifies as the

main topic of challenge in this article. We will offer these observations:

- Orthotics can be a conservative treatment modality for certain TMDs, if no occlusal changes are produced or planned.
- Orthotics often are used to establish new jaw positions and to create new occlusal relationships, according to various concepts of TMD treatment.
- Using orthotics and other occlusal treatments as part of restorative dentistry is perfectly legitimate, but this approach only rarely is indicated for treating specific types of TMD.

Finally, Dr. Huff's states that "Ethical care cannot be based solely on literature..." Maybe not, but it is a pretty good place to start for establishing ethical standards of care, "which in the field of TMD management, remains fraught with challenges." This observation is true for many conditions, and shouldn't stop clinicians from providing ethical professional care.

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Ronald S. Brown, DDS, MS, FACD  
Washington, DC

When phrases like "preponderance of literature" are used to describe only high-level studies, or only those that meet Cochrane standards, this is disingenuous at the very best. It implies that those practicing in areas where multiple studies that meet standards for methodological rigor are yet to be published are practicing unethically.

#### Adolescent Consent

Dear Dr. Chambers,

I am writing with regard to the column in *Issues in Dental Ethics* from the fall issue of this journal by Drs. Peltier, Wood, Zarkowski, Ozar, and Chean. They presented and analyzed a complex case, and many points were raised that it is worthwhile considering. Their perspective is rich in terms of ethics.

But the case hinges on whether a crown should have been offered as a treatment alternative in the first place. The mother's choice to take advantage of the insurance company even though a "filling will suffice quite well," seems to be placing her wallet ahead of her daughter's well-being; wanting more treatment than necessary. Is the mother attempting to over-treat the tooth now to prevent possible future personal costs? All such abstract ethics cases suffer from this ambiguity since there is no actual patient in the chair and commentators are free to imagine the circumstances or what might have been going on in individual's minds.

Why is a crown being offered when a simple filling will suffice? Is the dentist being ethical in suggesting up-treating the tooth for financial gain? Although the dentist suggests and the mother wants a crown because the

insurance could pay for it, they will still need a predetermination for insurance coverage, which is not a guarantee of insurance payment.

With the intrusion of insurance into our practices, it is most important to tie ethical and legal issues into a practice management viewpoint. Dentists above all need to have a full armamentarium of decision making tools to be successful in today's dental world. Proper decision making must include all relevant factors because they are entwined such that one cannot be fulfilled without the other being considered.

Joseph P. Graskemper DDS, JD, FACD  
Stony Brook, New York

#### Correction

The authors of the paper, "Navigating with Special Needs" that appeared in the fall issue of this journal wish to correct the list of authors. The byline should have read: Pamela Arbuckle Alston, DDS, MPP, FACD; Andrea Akabike, Monica Chadwick; Ada Sosa. The authors also wish to acknowledge the contributions of Tangerine Brigham, Lois Bailey Lindsey, and Caitie Nolan.

## Editor's Note

# Oral Health and Dentistry in Other Countries

The Frenchman Alexis de Tocqueville's *Democracy in America* used to be required reading in high school and college U.S. history and civics classes. It is still worth reading as a mirror on what makes this country unique. De Tocqueville spend several years here during the administration of the first U.S. president elected from "west of the mountains", Andrew Jackson. It was a pretty populist time, with mass resettlement of Native Americans, squirrel shooting from the front porch of the White House, dismantling the national bank, and many states rescinding recently established regulations licensing physicians. (No one had thought to license dentists in the 1830s.)

De Tocqueville's point was that the political system, the economy, the culture, and the trades and professions were a reflection of "national character." "Equality develops in every man the desire to judge everything by himself; it gives him, in everything, the taste for the tangible and the real, scorn for traditions and forms" (Book 3, Part 1, Chapter 10).

This theme issue considers oral health and dentistry from the perspective of national character in seven countries other than the United States. The suggestion is that there is more to the way dentistry is practiced

than the skill of practitioners as reflected in their technology and education. Although contributors were free to comment on almost anything particular to dentistry in their countries, none of the authors mentioned procedures, materials, or the technical outcomes of treatment. Two observed that patients could find oral health care in their countries of equal quality to that practiced anywhere in the world. The real questions were how many citizens could take advantage of the best care, how treatment is paid for, what should be done for those who could not afford or find the best, and how much control the profession has over dentistry. Naturally, these are serious questions in United States dentistry as well.

The seven stories presented here demonstrate the variety of ways oral health and the organization and delivery of dentistry reflect the national character of different countries. Countries such as Iran and China are experiencing rapid economic growth, which drives the supply side of dentistry. Countries such as the United Kingdom and Australia work to balance government and professional control and to find the best meaning of the term "local." India and many countries in Latin American face needs that substantially overshadow available resources. It might be reasonable to assume that the wholesale transplantation of any system into a different context would encounter major difficulties.

There is no single dimension that defines national character as it relates to oral health. These articles are slow reading because they are rich in individual detail. As a guide for myself, I arrayed the countries based on five questions: (a) At what points beyond initial licensure are dentists requalified? (b) Who controls the practice act and oral health policy? (c) How is dental care paid for? (d) How are auxiliaries used? and (e) Who receives care? I have arranged each country across these dimensions as best I could. Naturally, there will be differences of opinion over the precise location of each country and even over whether these are the right dimensions. Readers and those more familiar with the detail of various countries are free to rearrange this chart. But it is almost certainly inescapable that there is great variety in the national context in which dentistry is practiced and that reality on the ground matters. Each country is trying to solve its own version of the oral health challenge.

A pronounced theme in all papers was that the standard of care is the same across all countries but it is not available to all. We know what good dentistry looks like; but we cannot deliver enough of it. This suggests that the distribution of oral health is a function of the general thriving in a nation. The acknowledged marker of how wealth is distributed is called the



**Qualifications of Practitioners**

<i>None after licensure</i>		<i>Profession</i>		<i>Government</i>
LA	In		Aus, UK, Iran, Fn, Ch	

**Control of Practice Act, Health Policy**

<i>Commercial</i>	<i>Profession</i>	<i>Shared</i>	<i>Government</i>
Iran, LA		Aus, In	UK, Fn, Ch

**Reimbursement Systems**

<i>Fee-for-service</i>	<i>Mixture</i>	<i>Mostly government</i>
LA, Iran	Aus, UK, In	Fn, Ch

**Use of Auxiliaries**

<i>Few</i>	<i>Several with Dentist</i>	<i>Multiple, some independent</i>
Iran, In	LA, Ch, UK	Aus, Fn

**Distribution of Care**

<i>Few get high end repair</i>	<i>Comprehensive</i>	<i>Broad and preventive</i>
In, LA, Iran	Aus, UK	Ch, Fn

**Gini Index**

50	40	30	20
Ch (47), LA, (46), Iran (45)	In (35)	UK (32), Aus (29)	Fn (21)

NB: Aus = Australia, Ch = China, Fn = Finland, In = India, Iran = Iran, LA = Latin America, UK = United Kingdom

Gini Index (named for the Italian statistician Carrado Gini). The higher the index, say anything above 45, the greater the disparity in resource distributions within a country. The lower the score, say anything below 30, the more equal the distribution and the greater opportunity for all citizens. The Gini Index is tracked in the United States by the CIA, and

I used their numbers here, because high scores are a signal of political instability within a country. If you are curious, the Gini Index in the United States is the same as the average in Latin America, in China, and in Iran.



# Dentistry in the United Kingdom

Kishor Gulabivala, BDS, MSc, PhD,  
FDS, FHEA, FACD

## Abstract

In the United Kingdom (UK), dental care is administered as part of the National Health Service, a government system involving tax-based funding, country-wide standards, and some centralized management. Actual dental care is a hybrid of public (60%) and private (40%) reimbursement, contracts and fee-for-service payment schemes, often multiple streams for the same patient. This blend of governmental and capitalistic forces has undergone constant adjustment and has demonstrated general improvement in oral health and patient satisfaction in recent years. The complexity of the system makes it vulnerable to dentists gaming reimbursement opportunities and patients being uncertain about options and quality of care received. It is projected that as attention shifts from services provided to oral health outcomes, there will be more attention to local variations in need, greater use of therapists, and increasing emphasis on prevention.

**Dr. Gulabivala** is Professor of Endodontics at Eastman Dental Institute, University College London; k.gulabivala@ucl.ac.uk.

*Acknowledgements: The author would like to thank Desmond Wright (Consultant in Public Health) for sharing his insight about the organization of the NHS in England.*



## Organization of the National Health Service in England

Dentistry in England and the UK is a part of the National Health Service (NHS), set up in 1948. The NHS is the largest such organization in Europe with a budget of £116.4 billion and a staff of 1.5 million. The seven laudable principles underpinning the NHS are that it:

1. Provides comprehensive service to all its citizens
2. Provides access based on clinical need rather than ability to pay, being free at the point of delivery for most services
3. Aspires to high standards of excellence and professionalism
4. Reflects the needs and preferences of patients, their families and carers
5. Works across organizational boundaries and in partnership with other organizations to serve the interests of patients, local communities, and the wider population
6. Commits to providing the best value for tax payers' money and the most effective and fair use of finite resources
7. Is accountable to the public communities and patients.

The organization and management of the NHS dental services is complex, involving multiple bodies representing the government, the NHS organization, the patients (or population), and the dentists. Details of the individual organizations are beyond the scope

of this article but some definitions are provided (Table 1) to give a flavor of the structure. NHS in the UK is divided into regions: England, Wales, Scotland, and Northern Ireland; each has its own chief dental officer (CDO). The CDO for England is the British government's most senior advisor for dentistry in England, is recruited by NHS England, and is the head of dental staff and dental profession in England. The CDO is one of the six chief professional officers, one for each of six professions, to give advice in their respective specialty. As a senior member of the Medical Directorate, the CDO works in partnership with other directorates, domain leads, and other clinical leaders in regional and local area teams to improve outcomes for patients, and champion the role of dentists and dentistry within the health system.

The government's Department of Health (DoH) leads, shapes, and funds health care in England. The NHS organizations are tasked to work with the DoH to achieve a mutually aligned purpose. The DoH enables health and social care bodies to deliver services according to national priorities and works with other parts of government to achieve this goal. It sets objectives and budgets and holds the system to account on behalf of the Secretary of State for Health, who has ultimate responsibility for ensuring the whole system works. The system is therefore

intrinsically and directly linked to the residing government, and is therefore a recurrent national news item and topic of parliamentary challenge.

In 2013 the NHS underwent the most wide-sweeping reorganization since its creation, involving the abolition of several organizations and formation of others. The purpose of reform was multifold, giving local communities and patients more say in their care, as well as putatively doctors and nurses more freedom to shape the services to improve quality of care. The intention was to allow greater direct control over planning and commissioning at a local level. The new emphasis was on preventative approaches. The roles of these organizations and their interrelationships are defined in Table 1 and require dialogue, discussion, negotiation, and debate amongst them to crystalize optimal modes of operation, which can be a challenging process with, at times, unpredictable outcomes.

The mode of operation in the NHS has undergone a paradigm shift in its approach to management within my practicing life. When I first started my dental career, the hospital services were led, directed, and managed by clinicians with the consultant dentist at the helm and in charge of their “firm.” They were the “kings” whose opinions held sway in how the service was run. The service is now run and administered by “managers” who may or may not have a clinical background, are well-versed in NHS management culture, and are custodians of the

**TABLE 1. Organizations and their roles in the NHS.**

**NHS England** (NHSE) supports NHS services by funding local clinical commissioning groups to provide the best possible care for patients through general, community, urgent care and hospital dental services. NHSE brings together expertise to ensure national standards are consistently in place across the country.

**Public Health England** (PHE) provides national leadership to support public health and works with local government, the NHS and other key partners to respond to health protection emergencies. It helps protect and improve the nation’s health and address inequalities by reducing preventable deaths and the burden of ill health associated with common ills, infectious diseases and environmental hazards.

**Health Education England** (HEE) is the NHS wing that focuses on delivering the healthcare workforce for England by ensuring that the workforce has the right numbers, skills, values and behaviors. It is responsible for the education, training and personal development of every member of staff.

**Local Authorities** (LAs) commission care and support services and have a responsibility to protect and improve health and wellbeing.

**Clinical Commissioning Groups** (CCGs) constituted from doctors, dentists, nurses and other professionals plan and buy services for their local community from any service provider that meets NHS standards and costs, including NHS hospitals, social enterprises, voluntary organizations and private sector providers.

**Health and Wellbeing Boards** (HWBs) are a forum where key leaders of the health and social care system work together to ensure that services respond to communities’ needs and priorities. They have strategic influence over planning decisions, strengthen democratic legitimacy by involving elected representatives and help create a responsive local health system.

**Monitoring Bodies** (CQC, Monitor & Healthwatch)

**The Care Quality Commission** (CQC) measures compliance of services with national standards of quality and safety. Healthwatch England (part of CQC) monitors, protects, and promotes the interests of people by ensuring that NHS services are cost-effective. “Monitor” licenses health care providers to achieve this.

**National Institute for Health and Care Excellence** (NICE) provides guidance to help health and social care professionals deliver the best possible care for patients based on the best available evidence. NICE involves patients, carers and the public in the development of its guidance.

budgets. Clinicians are therefore no longer in charge of the service, only their clinic, except by virtue of representation by clinical leads or clinical directors who provide the clinical perspective on how their service should be run. Their opinions and views on service delivery must be conveyed through dialogue, debate, and negotiation with other healthcare workers, administrators, and managers. Most clinicians at the workplace may not have any deep insight about higher management structures and imperatives, and only those applying for senior management posts are likely to invest time in trying to understand the intricacies and complexities of NHS management and priorities. Their main interface with the management is likely to arise from lack of resource or facilities impinging on their daily clinical activity.

## NHS Dentistry

In the 60 years of its existence, NHS dentistry has focused mainly on treatment rather than prevention or quality. The mode of funding, fee-per-item-of-treatment, coupled with a business model of running dental practices (in contrast to medical practices), resulted in “gaming” at different levels to gain maximal financial benefit, albeit for a proportion of dentists. The consequence was little visible reward for good dentists engaged conscientiously in improving oral health and providing a service that patients liked, with little sanction for those not meeting these goals. Historically, reimbursement had followed activity rather than patients’ needs by virtue of the payment system.

The welcome reforms recommended that the quality of the service and its outcomes should be explicitly recognized in the reward system of any revised contract. To achieve this, robust measures of quality would need to be devised on oral health outcomes and patients’ perceptions of quality. The old funding system was to be reversed and the process of reallocation of resources to align it with needs has begun; the new dental contract based on registration, capitation, and quality has been piloted and prototypes are about to be tested.

In the interim, however, since April, 2006 NHS dentists in England and Wales have been paid according to how many “Units of Dental Activity” (UDA) they perform in a year. Dentists in Scotland still get paid on a “fee per item” basis. The actual value of a UDA had been set by the local NHS Primary Care Trust (England) or Local Health Board (Wales), in discussion with individual dental practices. The average value was around £20 and varied around the country. Usually the more in need an area is for NHS dentists, the more a UDA is worth but not always. Each dental procedure has been classified into a band that determines what patients pay and the amount of UDAs a dentist accrues. The bands are:

- Band 1 (1 UDA): Diagnosis, treatment planning and maintenance (examination, x-rays, scale and polish, preventative work, minor changes to dentures).
- Band 2 (3 UDAs): Simple treatment, e.g., for example fillings (including root canal treatment), extractions and periodontal treatment.
- Band 3 (12 UDAs): Complex treatment that includes a laboratory element (e.g., bridges, crowns, and dentures; excludes mouth guards).

UDAs are awarded and calculated for completed treatments. Some of the anomalies include the fact that it does not matter if the dentist provides one crown or ten crowns, they still only accrue 12 UDAs. If they perform endodontic treatment on a simple maxillary incisor or five difficult molars, the reward is the same three UDAs, which incidentally is also the payment for a tooth extraction. The system has therefore attracted gaming of a different sort, including books and publications providing guidance on how to do so “legitimately.”

In contrast to medical and hospital dental services, general dental services are not entirely free at the point of delivery but incur subsidized patient charges, except for those who may be exempt. The funding for general dental services for England therefore consists of core NHS funding plus a proportion of patient charges. In 2015, the core dental budget was £3.7 billion with patient charges accruing £714 million.

The overall ambition of the reformed NHS dentistry service is that of a lifetime-focused, evidence-based oral health service with the aim to prevent oral disease, minimize the impact of oral disease on general health, and manage identified disease with a view to maintain and restore quality of life. The vision is that personal computers in all dental surgeries within three years, followed by their central connection, would allow collation of clinical data to support shared information on quality and outcomes.

## Private Dentistry

Private dental care operates outside the NHS and is not funded by it. Funding of private dentistry is through dental



insurance, savings plans, or simply private payment as required. The spending on private dentistry is estimated at £2.2 billion. Patients elect to seek such care for convenience or quality. It is estimated that 15% of dental practices are completely private, 15% completely NHS, and the vast majority (70%) provide both NHS and private care. The interface between NHS and private service is sometimes blurred and greater operational clarity is required.

## The Dental Workforce

The Centre for Workforce Intelligence (CfWI) was commissioned by Health Education England (HEE) to forecast and analyze the future supply of, and demand for, the dental care professional workforce projections for England up to 2025. This stocktake followed the CfWI's review of 2013 for dentistry student numbers that resulted in a reduction of annual dental school intake. That review recommended that HEE commission the CfWI to conduct a stocktake of the multiprofessional dental workforce, focusing on dental care professionals in their totality. The purpose was to enable HEE to develop its strategic position on the workforce required to deliver services in both the NHS and the private sector, and focused on the need for a changing dental "skill mix" in the context of the proposed reform of the NHS dental contract.

The UK dental workforce profile is given in Table 2. Of the registered dentists, 47% dentists were female. There were 44 dentists per 100,000 population (51 per 100,000 in London). It is worth noting that EU laws allow dentists within any EU country to work in any other. Such migration patterns may make prediction of future manpower requirements more challenging. Brexit is also likely to have

**TABLE 2. UK registered dental workforce.**

<i>Registrant Type</i>	<i>December 2008 Total</i>	<i>January 2017 Total</i>
Dentist	32,281	41,441
Dental Care Professional (DCP)	56,880	67,669
Dental Nurse	42,959	53,358
Dental Technician	7,460	6,176
Dental Hygienist	5,160	6,898
Dental Therapist	1,164	2,869
Clinical Dental Technician	121	352
Orthodontic Therapist	16	521
<b>All</b>	<b>91,548</b>	<b>109,110</b>

*Note: Some DCPs may have more than one title. Source: GDC, 2009, 2017; Extracted from Advancing Dentistry*

an impact. Dentists from overseas countries whose qualifications are not recognized must pass a statutory examination to be registered with the GDC.

## Deployment of the Workforce

The dental workforce is distributed amongst several different branches of the service.

### General Dental Services (GDS)

Primary care or GDS delivers over 80% of the dentistry in England through high street dental practices, which are funded through NHSE contracts to self-employed independent contractors. There are also some contracts for specialist services. The current contracts and patient charges were introduced in April 2006 with new reformed contracts expected in 2018. In 2015, 30 million (55.7%) people were seen by a dentist in England. Of these, 22

million were adults and eight million were children; 50% paid dental charges, 23% were exempt adults, and 27% were children (also exempt).

### Community Dental Services (CDS)

The CDS provides 4% of general dentistry, mainly for children and adults with a range of special needs, including physical and learning disabilities, dental phobia, and medically compromised patients. This service is delivered through salaried dentists who also undertake screening and health promotion. CDS may also provide a specialist referral service (secondary care) and a service to prisons.

### Urgent Care Dental Services (UCDS)

The UCDS facilitates the management of emergencies (uncontrollable hemorrhage, rapidly increasing swellings, serious facial and oral

trauma) through in- and out-of-hours services. A new model implemented in 2016, included call handling, telephone triage (day and night), and treatment service.

Hospital Dental Services (HDS)

The HDS provides specialist dental care (secondary and tertiary care), advice for complex treatments, routine care for severe special needs patients, accident and emergency cover, dental care for inpatients, and is where the training of undergraduate and post-graduate dentists mainly takes place.

Provision of Dental Education

The eighteen dental schools in the UK are distributed, 12 in England, four in Scotland, and one each in Wales and

Northern Ireland, each accepting different numbers of students. The dental schools are funded via the universities by the government (66%, plus 34% from other sources, including £9,250 per year tuition fee from students) and are coupled with dental hospitals that are funded via NHS trusts by the government through NHSE. These distinct strands of funding are accompanied by distinct management structures and remits for each. It is clear, therefore, that potential for conflicts exists, which should ideally be resolved at the highest management level in the dental school. Where such avenues of dialogue do not exist the conflicts may impact both training and education, although the needs of the patient should always prevail.

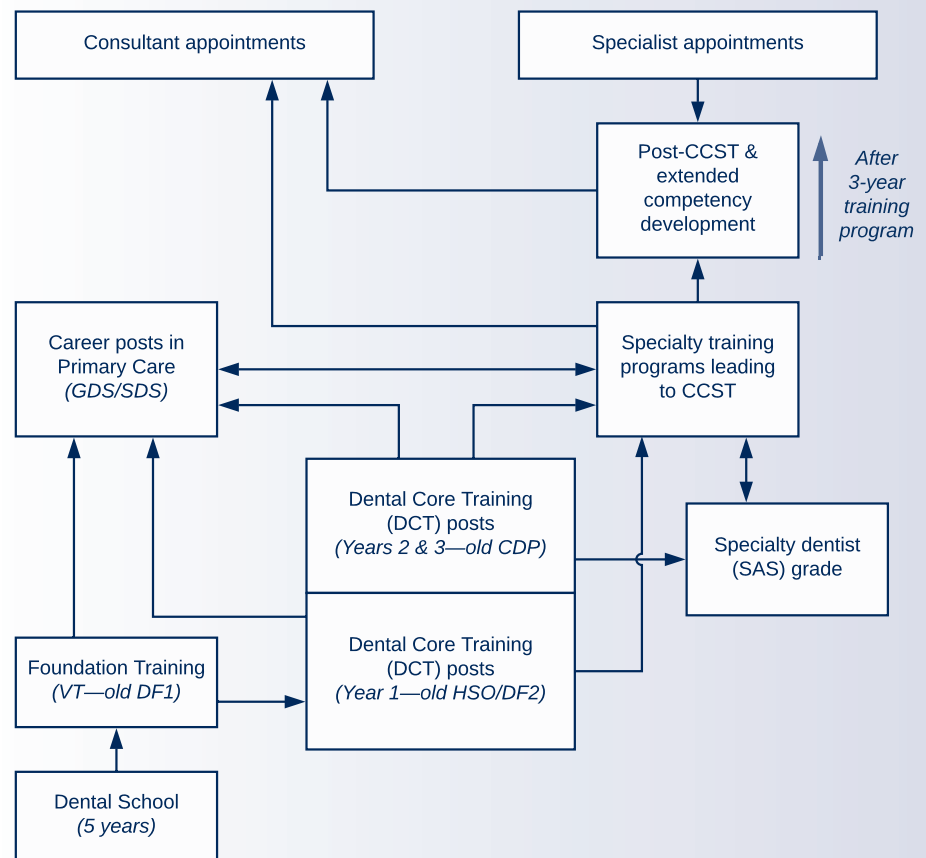
The learning outcomes for dental professionals are defined by the General Dental Council (GDC), previously in “The First Five Years (TFFY): A Framework for undergraduate dental education, 3rd Edition (2008),” then replaced by “Preparing for practice—Dental team learning outcomes for registration (2015 revised edition).” The learning outcomes are grouped in four domains and fit categories required by the GDC throughout the registrants’ practice life, listed under “clinical, communication, professionalism and management, and leadership.” The laudable aspiration is that the outcomes in each domain are integrated and support each other; the clinical and technical skills together with the underpinning scientific knowledge forming the central core. It is categorically stated that the clinical and technical domain should remain crucial to developing safe practitioners and will form a significant part of training and education programs. Seven overarching outcomes are required (Table 3) and apply to all dental professional registration categories.

Graduate dentists, now registered with the GDC, may follow a number of postgraduate career options but an initial period of foundation training (previously known as vocational training) is mandatory during which they are mentored by a suitably experienced clinician in a practice environment. Trainers and training practices are recruited and funded to fulfill this role.

A prevalent debate in the profession is that recently emerging dentists, whilst well-educated, are not sufficiently clinically trained to meet their practice remits. This may possibly be traced to

TABLE 3. Seven overarching outcomes for all dental professionals.

- Upon registration with the General Dental Council, the registrant is expected to be able to:
1. Practice safely and effectively, making the high-quality, long-term care of patients the first concern
  2. Recognize the role and responsibility of being a registrant and demonstrate professionalism through their education, training, and practice in accordance with GDC guidance
  3. Demonstrate effective clinical decision-making
  4. Describe the principles of good research, how to access research and interpret it for use as part of an evidence based approach to practice
  5. Apply an evidence-based approach to learning, practice, clinical judgment and decision-making and utilize critical thinking and problem solving skills
  6. Accurately assess their own capabilities and limitations, demonstrating reflective practice, in the interest of high quality patient care, and act within these boundaries
  7. Recognize the importance of lifelong learning and apply it to practice

FIGURE 1. **Dental Careers Framework.** (Revised April 2013)

a lack of integration between training and education in the undergraduate curriculum; academic assessments are surface-learning oriented, and technical training is not well embedded. This pattern of activity may have been influenced by the need for dental academics to increasingly focus more on research outputs than educational outputs. The role of providing clinical training has thus fallen to multiple part-time teachers, who simultaneously run their own practices; such diverse groups of multiple trainers may be difficult to coordinate to provide coherent training. It appears that by default, the training elements have been displaced increasingly into the postgraduate dental foundation training year, where again the teachers may not be suitably equipped to sustain a coordinated continuation of coaching and teaching for the neophytic dentist. It is not unknown for dentists to graduate having completed only one root canal treatment in their entire undergraduate training.

Having completed the foundation year training, dentists may enter a career in general or primary care practice or follow a hospital or secondary care pathway (Figure 1), leading to specialization. The GDC has established 13 specialties (Table 4), not all of which are funded by the government (endodontics, periodontics, prosthodontics). Dentists aspiring to follow these specialties would need to fund their own training (an added burden upon their undergraduate tuition fee debt), whilst simultaneously taking an income loss through lack of practice. They do, however, follow a prescribed and quality-assured training program, consistent with other funded specialties. The end-point of training is defined by satisfactory completion of an approved training program and

passing a Royal College exit examination, which together lead to the award of a Certificate of Completion of Specialist Training (CCST), allowing entry to the General Dental Council Specialist Lists.

There has been debate about whether unfunded specialties should even exist or be supported by the NHS, with strong advocates on both sides of the argument. Some believe that unfunded pathways should not be supported by the NHS because the graduates will ultimately practice privately to recoup their tuition fee investment. Others argue that private practice nevertheless contributes to the overall healthcare of the nation.

My personal belief is that all specialties in need and demand by the public should be appropriately and equally funded with equivalent career structures in hospital practice. Unfortunately, this is not currently universally true. The lack of a clinical career structure in the hospital environment may also undermine the development of its respective academic discipline because of a lack of equivalent pay and thus quality recruitment. However, in a public-funded system with finite resources, priorities have to be honored. The

TABLE 4. The dental specialties in the UK.

Specialty	Years of training to CCST	Post-CCST training (years)	Exit qualifications
Dental and Maxiofacial Radiology	4	No	DDR
Dental Public Health	4 (or 3 with MPH/MDPH)	No	FDS (DPH)
Endodontics	3	No	MEndo/MRD
Oral and Maxillofacial Pathology	5	No	FRCPATH
Oral Medicine	5 (or 3 with medical degree)	No	FDS (OM)
Oral Microbiology	5	No	FRCPATH
Oral Surgery	3	2	MOralSurg, FDS (OS)
Orthodontics	3	2*	MOrth, FDS (Orth)
Paediatric Dentistry	3	2	MPaedDent FDS (PaedDent)
Periodontics	3	No	MPerio/MRD
Prosthodontics	3	No	MPros/MRD
Restorative Dentistry	5	No	FDS (RestDent)
Special Care Dentistry	3	No	MSCD

\*There are a number of runthrough training posts of five years in Orthodontics. Source: GDC; State of the Oral Health and Future Challenges Facing UK Dentistry

matter becomes one of ensuring adequate representation and negotiating power at the decision-making table.

Overall, the oral health surveys in the UK show an improvement in the oral condition of the nation, with a projected decline in edentulousness and retention of more healthy teeth into older age (Figure 2).

An aged population retaining more teeth will result in greater wear and tear problems of the teeth and potentially the need for more complex dentistry. It is further projected that across the UK, at least 1.8 million people aged 65 and over could have urgent dental conditions (dental pain, oral sepsis, extensive decay). By 2040, this number is estimated to have

increased by more than 50%. There is therefore a perceived urgent need to improve oral healthcare for the elderly (Table 5).

At the other end of the population spectrum, caries levels in children are unacceptably high in England. Twelve percent of three-year-olds (Survey 2013) and 25% of five-year-olds (Public Health England survey 2015) had caries, with an average of three to four teeth affected, the vast majority untreated. There was wide variation (4%-56%) in the prevalence of tooth decay by region, with poorer dental health in north England; 41% of this variation could be explained by deprivation.

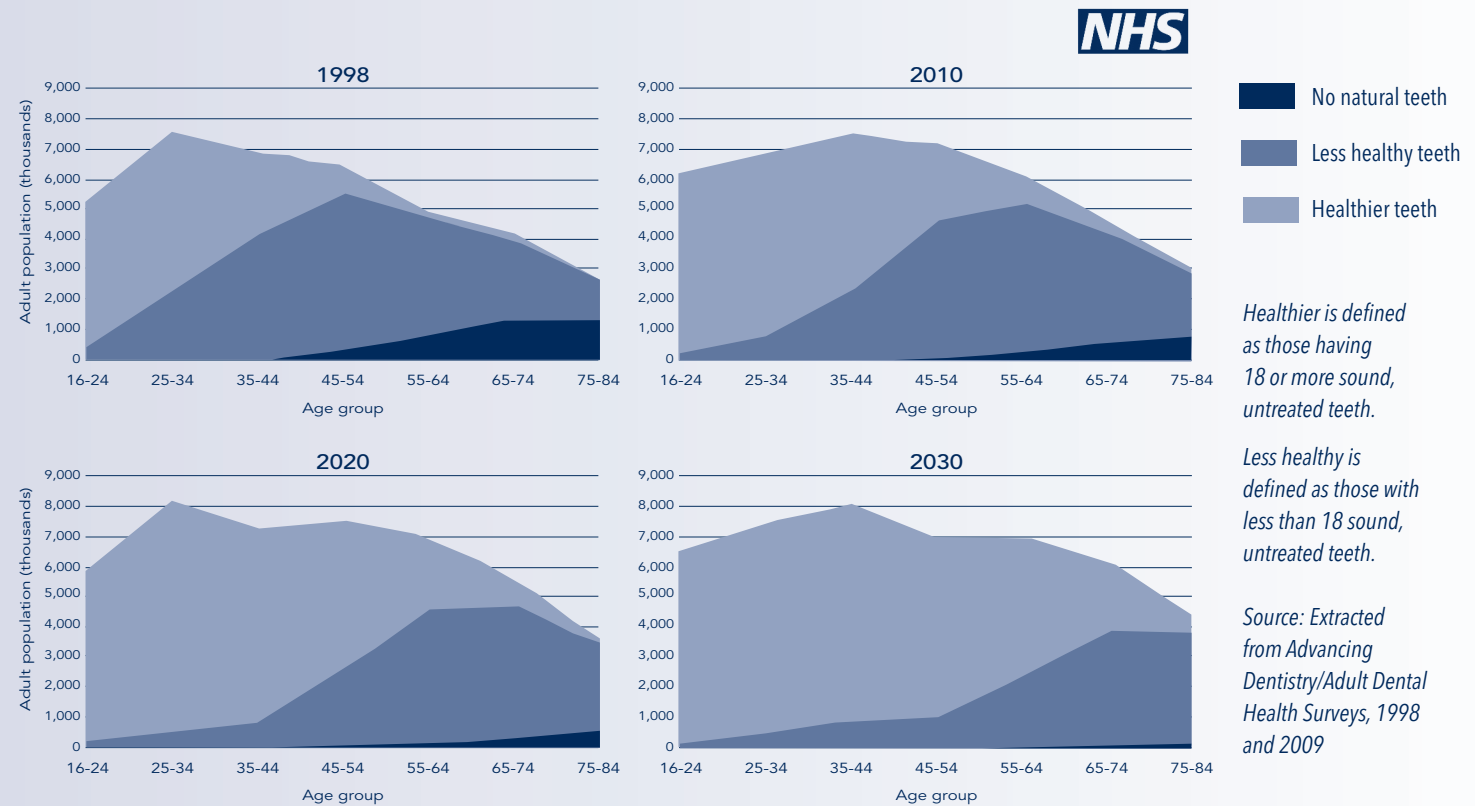
More than 30% of children in England did not see an NHS dentist between 2012-14. In the two years to March 2016, only 38% of children up to age four years in England accessed

a dentist. The rate varied across the country from 15%–58%. Tooth extraction was the most common reason for hospital admission for children aged five to nine years. In the financial year 2015-16, the cost of tooth extractions was approximately £50.5 million among children and young adults up to 19 years, the majority for tooth decay. Whilst for children under five years, there were 9,306 admissions for tooth extractions (7,926 specifically due to tooth decay), at a cost of £7.8 million.

A number of cost-effective interventions may prevent tooth decay and save money long-term, as well as reduce the need for school leave. Targeted community fluoride varnish programs may gain an extra 3,049



FIGURE 2. Dental health and future projections to 2030.



school days per 5,000 children. It is estimated that the return on investment for this intervention to be £2.29 for every £1 spent after five years, increasing to £2.74 after ten years.

The future intention is to improve children's access to NHS dental services for regular preventive advice and early diagnosis for prompt management. The relative shortage of specialist pediatric dentistry services will need to be addressed. NHS England and the profession will need to ensure that preventive care is adequately resourced and delivered and dental access is measured twelve monthly rather than 24 monthly, in line with the National Institute for Health and Care Excellence guidance. Public campaigns to educate parents and children should also be considered for their importance of good oral health and prevention, as

TABLE 5. Recommendations for improving the health of the elderly.

1. Health professionals in acute and community care settings should receive training in oral health.
2. Social care providers should give their staff appropriate oral health and care training; as well as ensuring that all services have an oral care policy.
3. Preventative advice on maintaining good oral health should be easily available for older people, their families and their carers.
4. Government, health services, local authorities, care providers, regulators and the oral health profession should work together to develop a strategy for improving access to dental services for older people.
5. Health and social care regulators should ensure that standards of oral care are assessed during their inspections of care homes and hospitals.
6. All hospitals and care homes should have policies in place to minimize denture loss.

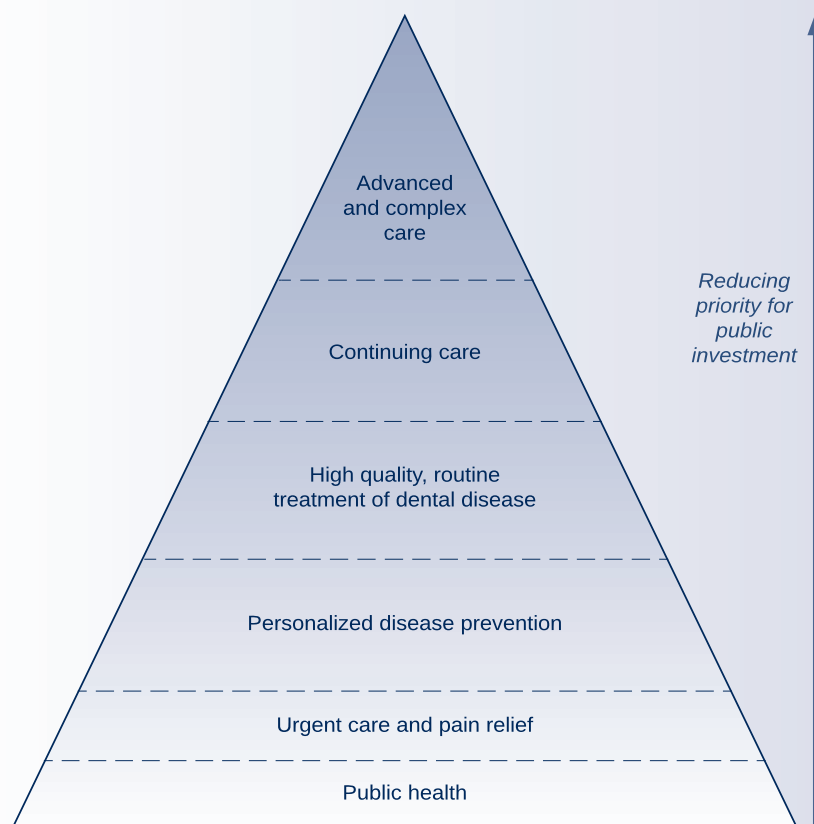
well as in awareness of the impact of sugar and ways to reduce its consumption. Local authorities without water fluoridation may need to be encouraged to introduce schemes to tackle the significant inequalities in children's oral health across the country.

### Debate on Future Planning of the Dental Services

The current composition of the dental workforce and its training structures are products of historical needs, decisions, and consequent evolution. HEE believes a radical rethink of the existing models of service delivery is overdue if cost-effective and efficient management of future patient demand is to be met. It proposes a radical strategy to meet current and future healthcare needs in the UK, taking account of demographic, technological, and geographic factors, as well as future models of commissioning and service provision.

HEE believes that the priority for public funding investment resides in the lower levels of the pyramid shown in Figure 3. Mapping of the competences of the dentist against other dental care professionals shows overlapping as well as distinctive characteristics for each group (Preparing for Practice 2015—GDC). The dentist should be competent to undertake the majority of procedures, but those that are uniquely limited to the dentist is much smaller, with dental therapists, hygienists, clinical dental technicians, and others qualified to undertake many of the duties. HEE believes that a greater proportion of dental care could be

FIGURE 3. Priorities for public investment in oral health.



Source: Extracted from *NHS Dental Services in England—An independent review led by Professor Jimmy Steele*

delivered by dental therapists and dental technicians instead of relying on the highly specialized skills of the dentist; although in the current climate, the assumed skills of the emergent dental graduates may be over-estimated. It is estimated by the Center for Workforce Intelligence that the ratio of service delivery by dentists versus dental care professionals is currently 80:20 in favor of dentists, whereas by 2025, it could be closer to 50:50.

The corollary of such thinking is to explore common entry to shared undergraduate programs for all dental professional groups, with opportunities to progress to more advanced learning for different roles based upon projected demand for those roles. This model is believed to increase flexibility for trainees, in that their

final choice of profession could be made later based upon their progression and opportunities available, or allow them to step off and on the training ladder to better meet their own personal circumstances and preferences. The system is also perceived to provide a more flexibly modifiable workforce for service delivery, since it would be more straightforward to deliver the projected numbers required in each profession by tweaking the output opportunities from the common entry baseline. A prominent selling point of this plan is a more effective use of taxpayer funded resource.

There would also be implications further downstream in the higher training pathways (Figure 1). Following core training there are currently opportunities for 13

different specialties but a radical review of the nature envisaged would inevitably be followed by a review of these specialties, their need and cost-effectiveness, as exemplified in the priority allocation in Figure 3 for advanced and complex care.

This is an interesting and bold, but also a worrying development, for many in higher dental education. A common entry for all dental professionals would inevitably require a reduction in entry qualifications, whereas dentistry currently enjoys highly competitive entry requiring top grades from school leavers and attracting the best candidates. The proposal is perceived to have a dumbing down effect on the entry cohort with implications for the future well-being of dentistry. Clinical academics have traditionally been the custodians of the science and art of the practice of their discipline. Such higher development is facilitated by integrated development in the domains of research, education, and clinical practice. The proposed future plans are seen by some to potentially undermine the propagation of this custodianship.

### Public Perception of Dentists in the UK

Large sections of the healthy population see a dentist much more frequently and regularly than they see their general medical practitioner. Some people consider a visit to the dentist as routine, but others find the prospect terrifying. Around 53% of people have visited an NHS dentist in the previous two years, but public satisfaction with NHS dentists has fallen fairly steadily over the last 25 years, from over 70% to just above 40%.

The impression, reinforced by media and word of mouth, is that NHS dentists are hard to find. However, the

majority of those trying to get an NHS appointment managed to do so. Again, there is regional variation, with 65% of patients in urban areas able to make an NHS appointment with the first dentist contacted, compared to 44% in rural areas. There was independent evidence from Public Care Trusts of variation in availability of dentists in some regions (Primary Care Trusts were part of the NHS in England from 2001-13 and were administrative bodies responsible for commissioning primary, community and secondary health services).

Of those that find an NHS dentist, many are happy with both the dentist and the service they receive. This finding is not unique by sector of population or geographical region; it is widespread. A survey found that 86% of those receiving NHS treatment were “very” or “fairly” satisfied. Younger adults tended to have had good care in their formative years, with good habits and low disease experience. Middle aged groups recounted negative experiences over the years, mentioning large numbers of fillings; they were most keen for regular care and to stick with a trusted dentist. Those beyond retirement age had witnessed the biggest changes in dentistry and expressed greatest concern about maintenance costs and the need for more care and attention to their teeth. A lack of information about options for care make people suspicious or likely to be concerned about whether the treatment offered was really necessary.

Dentists are currently allowed to provide both private and NHS care from the same practice, even for the same patient. This is an important part of dentistry for many dentists (70%) and many patients. Patients often

report that it is impossible for them to distinguish between private and NHS care, leading to resentment. There is no prescribed list of items of treatment offered by the NHS. This gives the dentist freedom, but leaves the options for care open to interpretation causing uncertainty for both patients and dentists. Dentists can pick and choose what is provided and what is not on the NHS, resulting in patients being uncertain about what the NHS offers. Many dentists in the UK operate as part of independent businesses that hold contracts with the NHS. They receive an agreed amount of money from the NHS in return for delivering an agreed number of weighted courses of treatment each year; such a practice may operate alongside private care.

### Dominant Influences on Practice Culture

There is good evidence that the manner in which graduated dentists practice when they leave their dental schools is at variance with their undergraduate teaching in many aspects. It is a sad indictment that dentists who spent at least five years of their formative years learning the science and art of dental practice from their undergraduate mentors, so readily abandon their taught principles. There is a lack of comprehensive research to explain the reasons for such variations but some key arguments have been proposed.

It seems that many young dentists do not cope well with the transition from the protected environment of the dental school to the real-life world of practice, even though some schools

offer a “general practice” environment in their final year, supervised by general practitioners. The business elements of decision-making rapidly impinge upon scientific and clinical rationale to overturn established thinking. Under peer and practice-mentor guidance, confidence seems to develop that cutting certain corners may not necessarily accrue anticipated problems with mathematical certainty, whilst on the other hand, diligent compliant practice (albeit inexperienced) did not always guarantee freedom from problems. A practice-based culture and know-how then rapidly replaces the undergraduate-learned ideals.

Factors influencing the direction of this new and growing acumen as a “real dentist” come from a variety of quarters apart from practice, not least the dental companies and their consultants (gurus in the making), who demonstrate the business and cosmetic possibilities of their products and “smoother” mode of practice. Social media has served to accelerate the spread of this culture and embed a new truth. Evidence has in their minds less to do with literature than what peers can achieve and show in glamorous images and videos on the internet. The growth of “unregulated” gurus is a considerable and unchallenged threat to appropriate and ethical dental practice. The normally accepted ethics of dental practice may easily be submerged by

these competing influences. Cosmetic dentistry and loose practice ethics seem to be two of the many threats facing dentistry.

The main counter-balancing factor, apart the voice of experience (often simply regarded as outdated), is the threat of medico-legal action and litigation. The rate of fitness-to-practice hearings at the GDC and dental litigation in the UK is supposedly at an all-time high and possibly the highest in Europe.

### Differences in Dentistry between UK and Other Countries

Despite differences in training, service delivery systems and funding mechanisms across the world, the problems facing the dental-clinician-businessman, seem oddly and universally consistent. Regardless of attempts to engineer better systems and processes, ultimately, at the point of delivery human strengths and frailties prevail and seem guided mainly by personal and moral values. Perhaps the key selection criterion for dentistry ought to be this characteristic, which is seldom modifiable by dental mentors, whereas other qualities may be more plastic. The NHS has laudable characteristics and in the minds of the public, is a flagship of the nation’s character, as exemplified in the 2012 Olympics opening ceremony, however it continues to challenge everyone involved in it.

### Conclusions

The NHS has unique characteristics and problems in healthcare delivery but the challenge of balancing the cost of healthcare delivery with growing needs and demands of a cosmetically conscious, desire-chasing, and aging

population remain universally the same as anywhere else in the world. A rather obvious conclusion seems to be that healthcare and business make uneasy bedfellows, yet healthcare is expensive and must be paid for. There are intellectually and morally challenging decisions to be made in the future by the public and the profession to find a solution to the cost of healthcare. Prevention seems a glaringly obvious solution. ■

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# Iranian Dentistry

Ali Kazemian, DDS, PhD

## Abstract

In a country such as Iran which is experiencing rapid economic growth both dental needs and available resources will be in constant change. Lifestyle and dietary changes have increased the demand for care. At the same time, dentistry is seen as an attractive economic opportunity for young, aspiring Iranians. But these two trends have not necessarily proceeded in harmony, with significant disparities associated with urban and rural populations and concerns regarding overtreatment in the private sector. There is a challenge in having the resources to mount a significant oral public health effort.

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Dentistry is one of the most competitive academic disciplines in Iran. In recent decades, dentistry has been one of the first choices of many Iranian students who pursue higher education. In 2017, more than 580,000 students took the national university entrance exam of experimental sciences, among which almost 1,600 (fewer than 0.3%) succeeded in being admitted to a dental school. Those aspiring to become dentists aimed to a subject, which is assumed to provide them with a professional status as well as a financially rewarding job. This will only occur after training for six years in dental school, submitting an undergraduate thesis, and fulfilling certain commitments, such as two years of military service (for males) or service in deprived areas of the country (for both males and females).

The first Iranian dental school was established in Tehran in 1937. While the number of dental schools had gradually grown to five in 1979, the Iranian revolution year, and grew to 18 in 2000, it dramatically increased to 59 in 2016. They include public schools, their international branches, and the semi-governmental Azad dental schools. Almost two-thirds of dental students who study at public universities do not pay any tuition fee, while those who study at other schools pay for their education. Students who pay tuition fees could obtain their dental degree immediately after graduating, while the others need to fulfill their certain commitments.

The very first question that may arise, knowing about the exponential increase in the number of dental schools in Iran would be: Has this been a response to growing dental needs or demands of Iranians during last decades? Or, economically speaking, is there any other type of demand, which could explain such a trend toward excess supply in the dental market? We continue with two parallel explanations for this inflation in dental schools as (a) increasing dental demand and (b) increasing educational demand.

## Increasing Demand

The WHO Oral Health Report in 2003 described Iran as a country with low dental caries level (DMF/T: 1.2-2.6) among twelve-year-olds and middle dental caries level (DMF/T: 9.0-13.9) among 35 to 44-year-olds. A national survey in 2012 showed that the disease level has not dramatically changed with a mean DMF/T of 2.09 and 13.2 among twelve-year-olds and 35 to 44-year-olds, respectively.

However, according to four national oral health surveys in the recent two decades, the trend seems to be quite alarming. For example, middle-aged Iranians' DMF/T has increased from 11.3 in 1992 to 13.2 in 2012. Lifestyle changes, especially in the nutrition of public with more cariogenic foods, rooted in recent social trends such as urbanization,

Those aspiring to become dentists aimed to a subject, which is assumed to provide them with a professional status as well as a financially rewarding job.

might explain some parts of this increment in oral health needs. Furthermore, the DMF/T index of twelve-years-olds consists mostly of untreated decayed teeth (81.8%). It reveals considerable unmet needs in the public which raises the issues of availability and accessibility of dental care.

During recent decades, Iran has experienced considerable improvement in level of literacy (from less than 40% among adults in 1975 to 93% in 2015) and in education. Higher levels of literacy and education have built up growing health expectation that could result in higher level of demand for both basic and expensive dental care services. Increasing access to social networks and media have also resulted in enhancing demand for aesthetic and expensive dental procedures.

As in many other countries around the globe, people in underdeveloped regions of Iran have limited access to dentists in their areas. In Iran, there is a substantial difference across the country in terms of practicing dentists per capita. The ratio is eleven times higher in Tehran state than in less advantaged states such as Northern Khorasan (Kiadaliri, 2013). The density of dentists in the provinces and their social rank are shown to be highly correlated. Within big cities of Iran, there is also an obvious disparity in terms of availability of dentists between downtown and suburb areas. Policy-makers might have tried to address these issues by educating more dentists via establishing more dental schools.

### Increasing Supply

The growing youthful population in the last three decades and the improved economic situation of the country after the eight-year war in 1980s resulted in the increasing

demand of young people seeking relatively promising careers in dentistry. This social pressure might be translated in the policy-makers' decisions to establish dozens of new dental schools.

However, educational quality assurance of the dental schools at smaller cities has been a serious source of concern.

The growing number of dental schools has resulted in a dramatic increase in the number of dentists. By now, the dentist-per-population ratio in Iran is almost 1 in 2500, which is higher than the global average (almost 1 in 4500) and less than the ratio in the US (1 in 1644) and Europe (1 in 1408). The number of practicing dentists in Iran is going to increase due to high number of both graduates from dental schools in Iran and Iranian dentists who return from abroad. Some estimates suggest that Iran is likely to get the first global rank in dentist-to-population ratio in the near future. However, in order to make a correct prediction, we have to take into account the possible changes in the average age of retirement, percentage of non-practicing dentists, and immigration of a sizable minority of Iranian dentists to developed countries.

The number of specialist dentists in Iran is estimated to be almost one-fifth of the number of general dentists. There are twelve departments in dental schools in Iran corresponding twelve post-graduate dental programs, which include ten specialties (oral and maxillofacial surgery, oral and maxillofacial pathology, oral and maxillofacial radiology, oral medicine and diagnosis, pediatric dentistry, restorative and aesthetic dentistry, periodontics, prosthodontics, orthodontics, and endodontics) and

two PhD programs (dental public health and dental materials). The specialty courses take three to five years to complete. There are also some fellowship programs for specialists such as oromaxillofacial pain, dental implants, hospital pediatric dentistry, and dental trauma. The number of official specialties exceeds in the US which could be a sign for a trend toward more complex and possibly expensive dental procedures in Iran. While on one hand, it is good news in terms of quality of dental care, it could be an alarming trend regarding affordability of services for disadvantaged groups. Some dental public health experts believe that the more focused dental professionals are on state-of-the-art services, the less inclined they are to address basic needs of society.

The dental health delivery system in Iran is defined by four levels (Pakshir, 2004). The first level of care addresses primary prevention at health houses, which are mostly located at rural and suburb urban areas. At this level, oral health education, periodic examination of teeth, and referrals to higher levels are provided by ‘behvarzes’ who are selected from among young and interested local residents. During the current decade, an academic program for training bachelors in oral hygiene aims at this level, too. The second level includes providing simple extractions, tooth polishing, scaling and taking dental radiographs by dental therapists in health centers. Hygienists who have had two years of training for a period in 1980s were allowed to continue their education to obtain the degree of Doctor of Dental Surgery, after six years of service in local rural communities and passing an entrance examination at the end of their service. So, by now, just a very small number of dental hygienists are still

working within the system. The third and fourth levels of dental care system include services provided by general and specialist dentists, respectively. Dental assistants and prosthetic technicians are other major members of dental teamwork in Iran who could be trained in formal academic or informal settings.

### Paying for Care

In rural areas, 70% of oral health services are delivered by the public sector whereas more than 80% of dental care in urban areas is provided in the private sector. Dentists are mostly paid based on a fee-for-service model.

Almost all Iranians are covered for health insurance under four major social funds to which the employed, the employers, and the government contribute. However, there is a small fund for coverage of dental care in the current health insurance system. Public dental insurance mostly targets some distinct groups such as pregnant and lactating women, and children under twelve years of age, and this seems to have little influence on utilizing dental care services. Furthermore, the Military Personnel Insurance organization and some special affluent institutions, such as banks and the national oil company, have separated their employees’ basic insurance from other formal employees’ schemes. About two million Iranians are estimated to benefit from these far more generous packages, which may even include dental implants (Jadidfard et al, 2012).

Moreover, rises and falls of commercial dental insurance are a recurrent phenomenon in big cities during the current decade. It could be reasonably explained by high dental

needs in the society. A new form of quite illegal dental benefit packages in metropolitan areas which is advertised as insurance, is private business teams that persuade younger dentists, mostly in the areas of big cities with high number of dentists, to make reduction in their tariffs in exchange with high number of referred patients. In this way, these often unsustainable packages are sold under the label of “inexpensive dentistry.”

A series of oral health programs has been run at the public level from time to time by the Oral Health Bureau at Ministry of Health. For example, a national program for applying fluoride varnish has been executed at health centers and elementary schools on a number of occasions since 2001. Other programs have included oral health education at health centers, applying fissure-sealant for first molars of seven-year-olds, or a fluoride mouth-rinse program at elementary schools and kindergartens. Possible positive outcomes of these programs, however, could not be easily traced due to lack of sustainable administration and evaluation.

Information systems in the oral health system in Iran suffer considerably from obvious shortcomings. Lack of sustainable data gathering, applying different methodologies, and incomplete information collection have resulted in insufficiently reliable databases and loss of comparability over time that are needed for rational policy making (Tahani, 2013). The problems with information system in Iran’s dental care system could be considered as a subgroup of the

Lifestyle changes, especially in the nutrition of public with more cariogenic foods, rooted in recent social trends such as urbanization, might explain some parts of this increment in oral health needs. Increasing access to social networks and media have also resulted in enhancing demand for aesthetic and expensive dental procedures.

broader deficiency in medical electronic records. It has been recently addressed by implementation of national electronic health record in Iran since 2016.

Whereas an issue such as inefficient information system may not be a major concern in a developed country, these are common problems in oral health care systems of developing countries.

Overtreatment is one of the most concerning issues. Two similar surveys among Iranian and Swiss dentists revealed that overtreatment could be regarded as an important cause for concern in the dental profession (Kazemian, 2015; 2017). Different domains of dental practice,

especially those using new technologies, such as implant therapy or aesthetic dentistry, may be prone to overtreatment. A series of economic, cultural and health system-oriented factors may explain the seemingly high prevalence of overtreatment among Iranian dentists:

- Fee-for-service as the prevailing payment method that could be a motive for dentists to provide more service
- Commercial interests in dental materials and equipment advertised and offered by companies
- Increasing dentist-to-population ratio, especially in big cities
- Lack of evidence-based guidelines
- “Conventional wisdom” among the public assuming that more care is better care (Katz et al, 2013)
- Patient pressure or demand that may be associated with enhancing oral health literacy of the public
- Defensive care resulted from fear of malpractice

In general, it is not an easy task to give an accurate estimate of the quality of dental services in Iran. Nevertheless, it is not exaggerated to claim that dentistry in Iran is being practiced in line with the global new technologies and techniques in an up-to-date way. According to the current Minister of Health, Iran could be regarded as an interesting destination in terms of dental tourism due to the relatively low tariffs and high quality of dental care.

Turning back to the opening paragraph, we could sum up by regarding dentistry as a reasonable choice for someone who is going to select a career in Iran. However, it is questionable if the situation would be the same in the next decade. How long can the situation of Iranian dentists be as promising? Let's see! ■

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# Latin American Alternatives to the American Model of Dentistry

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## Abstract

Although large differences may be observed in dentistry across countries in Latin America, the high end of private practice is comparable to what is found in the U.S. or Europe. The profession generally manages its own affairs. Although dentists are respected, this is not a high-income profession, and the recent increase in the number of private dental schools is projected to put more pressure on dentists' earnings. Governments have limited resources to promote care for underserved population groups.

Latin America is a heterogeneous group of countries. A survey was conducted to prepare this descriptive report as accurately as possible and unify realities of the group.

Different social realities do not prevent drawing general conclusions about the region. It is possible to obtain excellent dental care similar to the best in the U.S. or Europe in every country considered. There are dental offices with internationally recognized standards for quality management systems, such as ISO, which ensures dentistry with demanding annual audits. However, considering the total population, these levels of skills only cover a minimum percentage of the region.

## Some Numbers Regarding Dental Care

- Governments have dental health plans but they only cover at best 10% of the possible benefits.
- Sixty-six percent of the population does not receive any kind of dental care.
- Preventive actions reach 33% of the population.
- In the cases where it exists, an average quality of dental care is provided.
- Ministries of health exercise control over dentistry with requirements and parameters like those of the U.S. in some of the countries considered. These requirements vary depending on the country and region within the same country.

Dentists are professionals who enjoy good prestige in all Latin American countries. It is a recognized profession, and similar to the U.S., dentists are seen as belonging to an ethical profession.

Organized dentistry, with authorities chosen by the dentists themselves, are found in every country. The organized component of dentistry deals with guild matters and promotes continuing education. They are in many ways independent from government activities. These organized dentistry groups comprise half of practicing dentists.

Dentists surveyed for this research see the need for more research on fluoridation of drinking water, preventive education at school level, long-term government effective policies applied to the whole population, and government policies in order to achieve a preventive approach.

## Some Numbers Regarding Dentists

Throughout the region:

- Seventy percent of dentists work alone in their offices, solo practice.
- The rest are divided between social services and corporate dental practices.
- Ten percent work in groups by specialty, although in some countries this is not a possibility.

Current technologies, such as digital radiography, CAD-CAM

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*This article is based on a report prepared for the Academy of Dentistry International, on which Dr. Sartori serves as Vice President for Education.*



and management software are an exception and concentrated in large cities.

When asked in the survey if a dentist who has just graduated can live comfortably from the profession, the answer was negative. All those who answered the survey, dentists from several countries in the considered region, said that it is not possible to live comfortably from dentistry's income.

The training is carried out in local universities and only a small percentage travel to more advanced countries to complete their studies.

Multiple dental schools have opened during the last years, so the region is producing more dentists, leading to increased competition. Very little regulation for dental schools and the number of dentists produced were found.

There are countries such as Brazil with 15% of the world's dentists (240,000 dentists mean that this is the country with the most dentists in the world). Some interesting data is that Uruguay may be the country with the

All those who answered the survey, dentists from several countries in the considered region, said that it is not possible to live comfortably from dentistry's income.

highest dentist/population ratio in the world, one dentist for 500 people.

Continuous education during professional life is not a requirement in more than 83% of cases. It is not an issue controlled by governments, and when there are controls in place, dentists regulate themselves in the case of specialties. In these cases, there are compliance requirements but they are exceptions if we take the region as a whole.

Dental assistants and dental hygienists are not prestigious or well-remunerated professions, and in general these tasks are performed by poorly trained personnel.

### **Different Types of Dental Care in the Region**

Fee-for-service continues to be a reality and the revenues are variable according to the country and vary further within the same country. Although there are fees established by the dentists' organizations, the differences are enormous.

Prepaid systems managed by insurance companies exist in very few cases, compared to the U.S. Mostly medical organizations or small independent enterprises manage this kind of dental care.

The prepaid systems are basically corporate dentistry organizations that have more or less reach according to the countries. They do not constitute a quality service but rather encompass many people. It is estimated that 40% of the population has this kind of coverage.

In many of our countries, medical institutions provide basic emergency care and, although there are plans for more specific care, they are rarely applied and controlled by the Ministry of Health. Of course there are exceptions.

### **Dental Industry**

Dental products are controlled by the ministries of health with international parameters, although the quality of the supplies is not the same as those in the U.S. This reality is determined by the costs.

Dentistry is less commercial than in the United States. Sophisticated marketing techniques are not considered of value. The presence of consulting companies or architecture companies focused specifically on dentistry are few. We can say that dental office management is very poor and only corporate organizations carry out this kind of activity.

As in the U.S., dentists choose to work in corporate clinics to avoid burdens of office management. The primary reasons given for preferring a corporate placement include increased costs of practicing dentistry, complexity of dentistry itself, increased regulations, and a perceived need of marketing techniques as a way to promote dental care.

The commercial activity of dentistry is a generator of continuing education, similar to what happens in the U.S. Product innovation is carried out by commercial companies who also decide what equipment to import. Brazil is the country in the region with the largest dental equipment and materials industry. Opinion is evenly divided over the question of whether the dental industry has a high impact on dental care in South America. ■

# Dentistry in Finland

Heikki Murtomaa, DDS, PhD, MPH

## Abstract

Dentistry in Finland until the Second World War was a bit like the Wild West, with practitioners providing what care was reimbursable to whomever they could attract. That was followed by about a quarter century of the government paying dentists to fill cavities in children's mouths, with limited success. Since then, the strategy has been to focus on universal preventive and early treatment provided by salaried dentists, who can also augment their incomes with fee-for-service care, in local communities. Dental education is entirely paid for by the government. Currently, there is a trend toward dentists concentrating in urban areas and charging more than the agreed government fee schedule. The patients they treat, especially the older patients, have experienced the greatest decrement in oral health status.

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Last year Finland celebrated 100 years of independence, as well as 125 years of dental education at the University of Helsinki. Regardless of this being a relative short history as an independent country, Finland has been inhabited more than one thousand years, since the first crusades in the early 11th century by the Swedish regime. Since then Finland was a part of the Kingdom of Sweden until it became an independent part of Russia as a grand duchy in 1809. The country has been on the crossroads between eastern and western Europe throughout its history. Presently Nordic cooperation is important, in addition to Finland being a member of the European Union since 1994.

Organized Finnish dental care has evolved through three stages of development. The first era, from the beginning of training dentists in 1892 at the University of Helsinki, was bloody and violent. Dental problems were solved as they appeared and mostly by forceps. School-based dental care, free for all elementary school children since the 1950s, transferred Finland to the era of restorative care. At that time dentists salaried by municipalities tried to drill and fill as fast as cavities appeared. This operating model turned out quite soon to be impossible because cavities developed faster than they could be filled. Based on increasing scientific understanding of etiology and prevention of major dental diseases, an era of organized and preventive-

oriented dental care was established by the Primary Health Care Act in 1972. Today when interaction and significance between oral diseases and general health is better understood, Finnish dentistry is more and more moving towards the era of oral health medicine. This is supported by legislation that places dental care equal to other health care.

The road to the present situation has been long and challenging. The Primary Health Act of 1972 placed emphasis first on children and expectant mothers. All youngsters under 17 years of age were entitled to free and organized dental care provided by municipalities. Presently the age limit is 18 years. When the Primary Health Act was put into force the mean DMF/T index for twelve-year-olds was 6.8; now it is 1.1—one of the lowest in Europe. This situation is a result of the combination of school-based dental care with fluoride rinsing programs, national health promotion activities, and systematic use of xylitol. The majority of young Finns are presently enjoying healthy teeth and well-treated mouths. The challenge today is, however, the accumulation of dental problems in a small group of children. These children disproportionately employ dentists as well as other health care professionals.

## Health Centers

During this millennium Finnish dentistry has undergone more population targeted changes than ever before. Dental care services are divided into primary and specialized care. Dental care as a part of municipally organized monitoring, health promotion and other health services is provided at the municipal health centers. Of 4,163 practicing dentists, about a half are working full time at the health centers. Health centers have well-equipped and modern dental offices and dentists are well paid, with opportunities to earn extra on a state regulated fee-for-service basis. All these dentists work in teams with auxiliary persons such as dental hygienists, dental nurses, and chair-side assistants. In 2016 one-third of Finland's population, those living outside of big cities in particular, used the dental health care services offered by health centers, with 4.9 million visits in total. Of these visits, 71% consisted of dentist appointments. The most common reason for dentist appointments was dental caries with limited oral evaluation being the most common procedure performed. In municipal health centers orthodontics and fixed prosthodontics are provided only according to nationally agreed-upon criteria. All adults are entitled to municipality-provided dental care and the fees are subsidized presently representing some one-third of those used in the private sector.

Access to health care, including

dental care, has been guaranteed according to the Health Care Act of 2010. In situations where an assessment of the need for treatment cannot be carried out immediately when a patient contacts a health center, a healthcare professional must assess the need for treatment no later than on the third working day from when the patient first contacted the center. Treatment that is not urgent has to be provided within a reasonable time, taking into consideration the health of the patient, and in any case within three months of the assessment. In dentistry and specialized medical care this can be postponed to another three months on justified grounds without jeopardizing the health of the patient. This law has increased the demand for care in health care centers placing an extra burden, particularly on dental professionals.

## Private Care

Privately produced dental care has a long tradition in Finland. Before the beginning of the school-based dental care organized by law in the municipalities in the 1950s, dental care was provided only by private dentists on a fee-for-service basis. The Sickness Insurance Act of 1964 provided for reimbursement of treatment in the private health sector, however, it left dental care almost outside of that system. Only dental care necessary for treatment of some general diseases were determined to be compensated. Later reimbursement was expanded to cover dental care provided to young adults and finally, since in the beginning of this millennium, all adults are entitled to reimbursement of dental care provided by privately practicing dentists. The compensation is set to be 60% of the fee according to the tariff regulated by the Ministry of Social

Welfare and Health. In practice, it is only 30% of the real fees of dental care in the private sector. Furthermore, compensation for orthodontic and prosthetic care are excluded. Privately practicing dentists have their offices mostly in urban areas. Most of them are doing well as entrepreneurs with fully-booked schedules. A new trend of large health care business chains interested in buying dental offices and employing dentists will likely change the present situation in the future.

## Dental Education

Dentistry is highly valued as a profession in Finland. According to the population surveys, dentists are among the ten most esteemed professionals, in addition to six different kind of medical doctors. There has been increasing interest among graduating high school students to apply to study dentistry. The dental students are accepted into a five-and-a-half-year university program based on a nationwide entrance examination. Since the education system is free to everybody including university studies, the social status of future students does not play any major role in being accepted. Furthermore, the government provides all university students a monthly allowance in addition to low-interest student loans and other benefits, such as inexpensive, but nutritionally balanced, hot meals in university cafeterias and housing allowances. As a consequence, the students are not burdened by unreasonable debts after their graduation, which seems to be the case in the United States. There are certainly some returns of high taxes prevalent in all Scandinavian countries.



The dental education program in Finland is offered in four universities located in southern, southwestern, eastern, and northern Finland, with total yearly intake of 180 students. The dental curriculum follows the guidelines and recommendations set by the Association for Dental Education in Europe, an organization with some 120 educational institutions as members. Since the year 2000 the universities have not run their own dental clinics due to fact that there were not any more financial incentives for patients to seek inexpensive care traditionally provided in the university dental clinics. All clinical training of the undergraduates is executed in municipal health centers or university central hospitals. This change was obligatory since the university dental clinics could not compete with the inexpensive care from municipally produced dental services. Presently the municipal health centers provide a large number of patients and this serves well the educational needs for training. In clinical sessions the students are supervised jointly by clinical teachers who are specialists and employed by universities, and municipal health care dentists. After graduation and two years of clinical experience, students can apply for specialist training. The specialist training posts are salaried and in addition to theoretical studies, they consist of supervised patient care in health care centers and central hospitals. The training programs cover orthodontics, oral and maxillofacial surgery, clinical dentistry with orientation to cariology and endodontics, pediatric dental care, periodontology, prosthodontics, and occlusal physiology. The programs are three years of full-time studying, excluding the six-year program of oral and maxillofacial surgery.

Since the year 2000 the universities have not run their own dental clinics due to fact that there were not any more financial incentives for patients to seek inexpensive care traditionally provided in the university dental clinics. All clinical training of the undergraduates is executed in municipal health centers or university central hospitals.

The Finnish dental educational system has provided a quite low dentist/population ratio of 1 to 1,378. Regardless of the relatively high number of practicing dentists, they are not equally distributed in the country. As in many other industrialized countries there is a tendency for dentists to work in cities. Fortunately, almost all vacancies in health care centers located in rural areas are presently filled. Of the practicing dentists, about 15% are trained as specialists. Most specialists work privately, one-third practicing in health centers. There are great regional differences in special dentist's services, and demand for care has been increasing faster than the services in public sector. There are national plans for specialists' education to better meet these challenges in the near future. Being an EU member country, there is a possibility as well for dentists to enjoy the free movement of labor. However, there are few foreign trained dentists working in the country. This is probably due to challenges in learning the Finnish language which represents an entity of its own. Foreign labor markets have not drawn many dentists to leave the country.

There is a relative long tradition of training dental hygienists in Finland. This was started in 1975 as a pilot program. Today there are four polytechnic universities offering dental hygienist training programs consisting of three and a half years. The training emphasizes oral health promotion but also gives competencies in screening, taking radiographs, and preventive procedures for caries and periodontal diseases. These include among others, different fluoride

After graduation and two years of clinical experience students can apply for specialist training. The specialist's training posts are salaried and in addition to theoretical studies it consists of supervised patient care in health care centers and central hospitals.

treatments, diet counselling, placing sealants, and removal of calculus. They can also take imprints, give local anesthesia, and make simple orthodontic appliances. The competencies included in the present training program has been agreed upon between the dental association and unions representing dental hygienists. Based on this consensus, the dentists are in fact the only ones who can perform an oral diagnosis and a dentist's referral is needed to a hygienist. Dental hygienists can work independently and run their own offices but this has turned out to be very exceptional. There are about 1,500 working dental hygienists most of them employed in the public sector. The dental hygienists are being trained in the same cities as the dental students which gives opportunities for joint exercises.

### **Finnish Oral Health**

According to epidemiological surveys, the number of healthy and treated teeth among adolescents is increasing. Sadly, dental problems are becoming more frequent in the private care system. This holds true particularly among those who do not visit dentists regularly. Among the adult population, the coverage of dental care is high, and about four-fifths of dentate adults visit a dentist within a two-year period. There is also a clear decreasing trend of untreated caries among adults. Periodontal diseases are still a great challenge to dental health care. These conditions can be found among a half of the adult population. Edentulousness has clearly decreased. It is still prevalent among retired people but less than one percent of under 55-year-olds are edentulous.

Regardless of the positive trend in oral health, there is still a lot of room for improvement. Finns are lazy in tooth brushing: about half of men but two-thirds of women report brushing their teeth twice a day.

An aging population places great challenges to Finnish dental care as well as on general health care as it does in many other industrialized countries. Older people are retaining their teeth longer, which potentially increases treatment needs. More and more of the elderly are polydiseased and polymedicated and in need of dental care. It is necessary that treatment procedures can be carried out in nursing homes and institutions calling for mobile dentistry. This is a challenge not only to dentists but to the existing health care system in Finland, too. The government is presently trying to find solutions to better provide ways to meet the health challenges with an overhaul of the structures of the social welfare and health care services system. By this action the government expects to better control the increasing cost of health care, to ensure equal and adequate social welfare and health care services for the population under the existing municipality-based service structure as the dependency ratio changes, to achieve complete horizontal and vertical integration of services, and to provide more options for citizens to choose their health care provider. How these aims will be met and what will be the influences on the dental care and practicing dentists remains to be seen. ■

# Dental Workforce Issues in India

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## Abstract

The extremely rapid economic development in India has created significant challenges for putting a system in place to respond to the oral health needs of the country. Tremendous growth has occurred in the number of dental schools, but they are primarily private and commercial. A patchwork of regulations for education and licensure has yet to be converted to a strategy for raising the level of oral health in the population. Most dentists practice in the urban areas of the country less in need of professionals.

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Dental education in India was formally established in the 1920s when the first dental college was started in Calcutta by Dr. Ahmed. Until the 1960s, all dental colleges in India were government-aided colleges. After 1966, private dental colleges were established. Currently, the growth of private dental colleges has far exceeded the number of government-aided colleges.

## Dental Schools

At present in India, there are about 316 dental colleges that are recognized by the Dental Council of India (DCI). The distribution of dental colleges across India is extremely disproportionate, with most of the dental colleges being located in Southern and Western states such as Tamil Nadu, Karnataka, and Maharashtra. In order to create more equal opportunities for all the students, more dental colleges need to be opened in the areas such as the Northeastern regions that are highly underrepresented. An exponential mushrooming of 76 dental colleges was witnessed in the last decade in the span from 2007-2017. The dental education in India is imparted through dental schools which are government aided (51) and private aided (265).

## Dental Governance by Dental Council of India

The DCI—a statutory body—was constituted on April 12, 1949 under an Act of Parliament known as the Dentists Act, (XVI of 1948). Amendments were made through an ordinance promulgated by the President of India on August 27, 1992. Through this ordinance, new sections were introduced in the Dentists Act, 1948 mainly to restrain the too-rapid growth of dental colleges, increase of the seats in any of the courses, and starting of new higher courses without the prior permission of the Central Government, Ministry of Health & Family Welfare. The amendment was duly notified by the Government of India in Extraordinary Gazette of India, Part II, Section I on April 3, 1993 with effective date June 1, 1992.

The council is financed mainly by grants from the Government of India, Ministry of Health & Family Welfare (Department of Health) though the other source of income of the Council is the one-quarter share of fees realized every year by various State Dental Councils under Section 53 of the Dentists Act, Inspection fee from the various Dental Institutions for Inspecting under Section 15 of the Dentists Act, 1948, and application fees from the organization to apply for permission to set up new Dental College, open higher courses of study, and increase of admission capacity in

Dental Colleges under section 10A of the Dentists Act, 1948 as amended by the Dentists (Amendment) Act, 1993.

Currently, a total of 218,580 undergraduate (BDS) and postgraduate (MDS) dentists are registered in Dental Council of India.

National Eligibility Cum Entrance Test-UG is an all-India entrance exam conducted by the Central Board of Secondary Education (CBSE) for admissions to MBBS/BDS courses in India offered by medical and dental colleges approved by the Medical Council of India/Dental Council of India under the Union Ministry of Health and Family Welfare, Government of India, except for the institutions established through an Act of Parliament. The number of attempts an aspirant can take the test is limited to three. Students from the states of Andhra Pradesh, Telangana, and Jammu & Kashmir are not eligible for 15% all-India quota seats as these states have opted out of All-India Scheme since its inception.

## Dental Licensure, Dental Governance, and Relation to the Government

As a result of the Dentists Act in 1948, DCI, which is still the premier governing body of dental education in India, was established to regulate dental practice and promote scientific advances throughout India. The responsibilities of DCI include the regulation of dental education, profession, and ethics and also liaising with the government to obtain administrative approval for dental college and higher educational courses.

The three major categories of dental colleges in India are: (Type A) government dental college as a part of a government university, (Type B) private dental college affiliated with a government university, and (Type C) private dental college as part of a private university.

In India, dental school candidates must meet certain minimum requirements to take the entrance examination. All candidates applying to dental school must be at least 17 years old at the time of admission or before December 31 of the same year of admission. Applicants must have successfully completed two years of higher secondary schooling or the equivalent in the areas of physics, chemistry, and biology (botany and zoology). Applicants must have received aggregate marks higher than 50% in the above subjects in qualifying examinations at a higher secondary school.

According to the Ministry of Social Justice and Empowerment in India, scheduled castes are defined as extreme social, education, and economic backwardness arising out of the traditional practice of untouchability. Scheduled tribes are defined as indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness. Potential students qualifying as members of scheduled castes and scheduled tribes, which are considered underserved populations, must have received aggregate marks higher than 40% in the above subjects in qualifying examinations at a higher secondary school. Admission to some dental schools is also based upon a quota for each caste system.

Students meeting the minimum application requirements may take the entrance examination to dental school. Applicants to Type A dental schools can

take both nationwide and statewide entrance examinations. Applicants to Type B dental schools must take only statewide entrance examinations. Applicants to Type C dental schools must take tests provided by the individual dental school.

## Degrees Conferred

The duration of the dental school program is five years, of which four are devoted to dental education and laboratory course work and one year to compulsory internship rotation. The Indian dental education system is comprised of BDS (Bachelor of Dental Surgery)—a four-year undergraduate training with a year of internship; and Master of Dental Surgery—a postgraduate program of three-year duration. Bachelor of Dental surgery has basic medical subjects such as human anatomy, human physiology and biochemistry, in first year BDS; dental anatomy and dental histology pharmacology, microbiology and pathology in second year BDS; dental materials preclinical conservative and preclinical prosthodontics, general medicine, general surgery in third year BDS; along with oral pathology; and the final year includes all the eight specialties of dentistry oral medicine and radiology, conservative and endodontics, prosthodontics, oral and maxillofacial surgery, periodontics, pedodontics and preventive dentistry orthodontics and dentofacial orthopaedics, and public health dentistry. The one-year internship program is rotational with around one month in minor and two months in major clinical departments.

At present, 316 colleges in India offer 26,370 BDS seats. Postgraduate courses are currently provided by 249 colleges, out of which 36 government



Due to widespread commercialization of colleges, dental education has become a business, and the ethical core of the profession has declined. With passing time there has been a gradual decline in the moral values of the workforce, with the majority concentrating on making money.

and 149 private colleges offer master's degrees in any of the nine specialties of dentistry depending on specialty available. DCI prescribes the curriculum and the training for the above courses. In addition, Diplomate of National Board (DNB) certification is being offered at selected hospitals for MDS degree holders by National Board of Examinations, an autonomous organization by the government of India.

### Oral Health and Oral Health Needs in India

India is predominantly rural, including about 69% of the population. Prevalence of oral diseases is very high in India with dental caries (50%, 52.5%, 61.4%, 79.2%, and 84.7% in 5, 12, 15, 35 to 44, and 65- to 74-year-olds, respectively) and periodontal diseases (55.4%, 89.2%, and 79.4% in 12, 35 to 44, and 65- to 74-year-olds, respectively) as the two most common oral diseases (Kothia, 2015).

About 80% of dentists work in major cities in India; compared to the population where more than 70% of the Indians reside in the rural areas. Very few oral healthcare services are provided in the rural areas. Oral

healthcare seeking behavior is also very low, especially among the rural population. A mismatch exists between oral health professionals and the population they serve. Even with a workforce of 1,180,000 qualified dentists in the country, the most basic oral health education and simple interventions are not available to the vast majority of the rural population and that is the misery of the whole scenario.

Thus, reach and quality of public health services have been below desirable standards. Eighty to 85% of people are spending money from their pocket for dental care. The majority of the Indian population belongs to the lower socioeconomic strata and resides in the rural sector. Thus, the oral health seeking behavior is very low in India. Although huge unmet treatment needs exist, striking inequality in delivery systems and the absence of an adequate community-oriented prevention system is further aggravating the lack of reach of dental facilities in rural parts of India.

The irony of the budget allocation in India is that, out of the total budget, the amount that is dedicated to health expenditure is very meager (2%), and out of this amount, only a minute percentage is allocated for oral health-related activities.

In the last financial year, only 4.1% of the total GDP was allocated to health-related expenditures in India, whereas other Southeast Asian countries with smaller populations allocate nearly the same amount or more for health-related activities from the government to improve the access to oral health care for the general population and also take measures to change its policies toward the oral health sector.

### Public Opinion Regarding Dentists

The path by which a patient reaches the clinic or nursing care in India is that of as a last option and not as a first reaction. This is mostly because of the expensive care, including the fee charges and expensive medicine, which usually surpass the paying capacity of the patient. Patients shy away from seeking care because of their lack of money and most of the time they wait to heal on their own.

In an effort to avoid going to a dentist, patients first try to solve their problems using local belief about the disease and its cure. They would naturally turn to herbs and other local products in search of relief. Only after comprehensive dissatisfaction with these natural or local remedies does a patient reach a clinic.

Another factor is the lack of identification of disease in initial stages, which also contributes to neglect and adds to disease burden and morbidity. The masses do not know when they should head towards a clinic for a check-up. Oral cancers which are the most prevalent in the country eventually are the ones, which when detected in earlier stages, are curable. However, this has not been possible due to lack of understanding and knowledge of initial symptoms.

### Exchange Programs with Other Countries

The Government of India offers a number of scholarships every year to international students who wish to pursue their studies in India. The offer

of scholarships is sent to the respective governments through Indian diplomatic missions abroad.

Government and the DCI lack specific abroad and student exchange programs and initiatives for dental students in India. Most of the programs are run by private institutions as part of international student exchange program or by Indian Dental Association (IDA).

## Roles of Scholarly Research on Practice Patterns

Dental students in India are trained to excel theoretically, but there seems to be some disconnect between what is learned and what is applied in the clinics.

A report assessed the contribution trend of Indian dental research to scientific publications during 1996-2007, where it was found that the number of average cites per Indian dental research work has decreased since 2002. The cited explanation can be that Indian dental researchers tend not to specialize in the research fields chosen, but the choice of the research topic is made by many other factors, including funding and lack of resources, besides personal interest (Rooban et al, 2010). Among the listed institutional reasons, the absence of adequate technical resources was the most commonly cited reason.

## Challenges to the Profession

Dentistry faces serious problems regarding accessibility of its services to all. In many developing countries like India, oral health services are offered by dentists, who practice in the cities

and treat the affluent parts of the urban population. It is often difficult for the poor urban and the rural population to get access to emergency care. Community-oriented oral health programs are seldom found. The major missing link causing this unfortunate situation is the absence of a primary health care approach in dentistry.

Numerous challenges exist for expanding oral health care in India. The biggest challenge is the need for dental health planners with relevant qualifications and training in public health dentistry. There is a serious lack of authentic and valid data for assessment of community demands, as well as the lack of an organized system for monitoring oral health care services need to guide planners.

Since there are no dentists in government decision making bodies, dentistry is at the mercy of medical professionals who usually take for their own profession the major share in the meager amount sanctioned by the government. Another important challenge is to produce a high-quality workforce for future generations. Due to widespread commercialization of colleges, dental education has become a business, and the ethical core of the profession has declined. With passing time there has been a gradual decline in the moral values of the workforce, with the majority of the workforce concentrating on making money.

Retention of dentists and therapists, particularly in the early years beyond graduation, is a major issue. Complete stagnation with regards to the infrastructure and the basic facilities provided in rural areas has made it difficult for those areas to attract graduates to them.

With increasing awareness and advancements, there has been a decline in certain diseases in urban

areas or developed areas. To cope with these changes, the workforce should be equipped and capable of satisfying the changing demands and needs of the society.

The theoretical quality of dental courses in India is comparable to the quality of dental courses in the U.S., and the students are mandated to read textbooks by leading international authors, whereas, in most dental schools, there are no strict weekly seminars, case presentations, or journal clubs to present treatment planning concepts at the undergraduate level. Laxmi, et al, in her 2014 study compared the dental curriculum of Indian and American dental universities and found both Indian and American curriculum were similar in their approach to educating dental students. The inclusion of rural postings to cater to sections of society which might be deprived of effective dental care marks a highlight of the Indian dental curriculum. ■

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# The Chinese Perspective on Dentistry

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## Abstract

The Chinese dental system is built on the stomatological model, meaning that dentistry is considered a branch of medicine. Dental schools in China compete favorably for students because dental faculties are in the same school as medicine and because liberal educational funding is available to students. A defined ladder of education extending beyond the first degree is in place and tied to hospital privileges and even to owning a private practice. Most dental care is provided in hospitals and is free, except for orthodontics and advanced treatment.

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## How is Dental Education and Licensure Organized?

In mainland China, dentistry is called stomatology because it includes clinical medicine of the relevant structures and systems. In the education system, Chinese dentists can be trained as doctors of other disciplines, if desired, relatively easily after graduation. That also explains why our oral maxillary surgery is strong. We have around 100 schools of stomatology in China. Most of them have five-year curricula for a Bachelor degree, some are seven years, adding a Master's degree, and a few are eight years, adding a Doctoral degree.

Graduates need to pass the national examination to get license to be a dentist. If they choose to work in a government hospital or university, they also need to complete a three-year resident training program, then they start to climb the ladder of professional titles, such as attending doctor (equivalent to lecturer level at university), associate chief doctor (equivalent to associate professor level), chief doctor (equivalent to professor level). If they choose to work in a private dental office, they may not need to climb this ladder as long as they get the trust of patients. But they cannot open their own practice if they do not obtain the attending doctor title.

## How Is Dentistry Practiced?

Government hospitals provide basic dental care and cover basic treatment free for dental disease such as caries, periodontal disease, tooth extractions, etc. But patients need to pay for orthodontic treatment, dental implant, and the like because those are believed beyond basic treatment needs. In private dental offices, patients pay everything by themselves. Some private offices charge more than government hospitals for their better service, circumstance, convenience, and so on to attract high-end patients; some charge less to attract economy patients.

## What Is the Oral Health Like in China? What Are the Greatest Needs?

With the large population of more than 1.3 billion people, we only have around 200 thousand dentists. The population/dentist ratio is about 7000:1. So we certainly need to train more dentists to satisfy the market requirement.

## What Defines the Best of Chinese Dentistry?

The best thing for the most dental programs in China is we have more practice opportunities for students. And since we treat so many patients at university clinics or government hospitals, our dentists usually have more clinical experience and become

Because scholars avoid studying clinical techniques, clinicians can only follow commercial companies' messages and this is now affecting practice patterns much in China.

skillful quicker than dentists who have fewer patients. The large volume of patients at university clinics also means we have more clinical records for clinical investigation.

### **What Exchanges, Connections, and Alliances Exist?**

At the country level, the Ministry of Education has a special program to support young scholars, including dentists, to go abroad for one year as visiting scholars. At the university level, many dental schools have student or scholar exchange programs with other countries. So each year, many young students or scholars are sent to America, Europe, Japan, and other countries to learn what is new.

With the development of the Chinese economy, some students even go directly into foreign dental schools right after their graduation from high school or apply for foreign post-graduate programs right after their graduation from dental school. The second author of this article is an example, who graduated from Chinese Medical University and now is getting specialist training in Masters of Science in Dentistry orthodontic resident program at the University of the Pacific.

### **What Does the Public Think of Dentists?**

The public usually considers dentists as medical doctors in China because they all graduate from medical university. Since the likelihood of becoming a medical doctor is relatively smaller than being a dentist nowadays, there is a tendency for high mark students to apply for dentistry more than medicine.

### **What are the Roles of Scholarly Research and Commercial Interests?**

One of the big issues in dental research is that few dental scholars research real clinical problems in China. Because of the competition of impact factors among universities and grant funding, most dental scholars turn their attention to basic researches to get high impact publications that usually have nothing to do with practice patterns. Because scholars avoid studying clinical techniques, clinicians can only follow commercial companies' messages and this is now affecting practice patterns much in China.

### **What Are the Challenges Facing the Profession?**

We believe we lack standards for the scientific evaluation of practices and outcomes in our field. Almost all treatment measures could improve patients' problems a little bit in some

respects, but which ones can benefit the patient most in terms of oral function, esthetics, long-term effects, and health remains largely a subjective opinion. These issues might not be answered by cellular and molecular biology. Our profession should solve these issues through rigorous clinical study.

From the second author's perspective as a graduate of the Chinese dental education system and a current resident in orthodontics in an American school, some differences between countries are apparent. The first thing to notice is the vast difference in tuition fee. In China, the government and school will provide a significant number of scholarships every year to outstanding students. Some top students even earn some money after paying the tuition fee. Even for students who do not get scholarships, the tuition fee is as low as other majors, like media, teaching, and business.

Besides that, the training goal of dental schools between America and China is also different. American dental schools emphasize training a clinician who can treat patients on their own, or on how to help students open their private practice. Students in China focus on broader knowledge of dental disease. The difference more or less influences students' choices after graduation as well. Students in China lean towards staying in university to do research work, to teach, and to see patients as their professors do; but America students prefer a break from their base of training and want to establish commercial practices, either private or backed by corporations. ■



# Alternatives to the American Model of Dentistry

## Australia

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### Abstract

Australia shares with the United Kingdom a complex system of qualification for practicing as a dentist, with layers of qualification in addition to those associated with a dental degree. Like the United States, it is also a web of political jurisdictions with state, territory, and federal levels, each establishing qualifications, practice regulations, and monitoring. Australia is also working to balance issues of a surplus of practitioners serving relatively well-off urban patients with disparities in rural areas.

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The colony of Australia was created on the January 26, 1788 when Captain Phillip (later Governor Phillip; the first governor of the colony of New South Wales) sailed into Sydney Cove and established a settlement there. He was met by local Aboriginal men, and initially, established a rapport with these people. This is thought to be due in part to Phillip having lost one of his upper central incisors. The absence of this tooth was seen by the Aboriginal people to be a sign of kinship; it was frequently practiced for Aboriginal men to have one of their central incisors removed as part of a coming-of-age ceremony.

The dental trade (as it then was) arrived with the first fleet, with several men purporting skill in the art of dentistry being recorded as practicing in the colony's early history. As with the United States of America, Australia is a federation of states and territories, which until 1900 with the signing of the Commonwealth of Australia Constitution Act, existed as autonomous entities under the British Empire. This meant that the dental profession was created in these different states and territories at different times. The various dental acts being established in 1884 in Tasmania, and 1887 in Victoria, while Western Australia introduced a Dental Act in 1894. To say that New South Wales is Australia's senior state is a misrepresentation with regards to establishment of dental legislation. New South Wales' Dental Act was

passed in 1900 and came into effect on January 1, 1901.

### Dental Regulation

The Australian Constitution does not give the Commonwealth government power to regulate the health professions. Regulation of healthcare professionals was carried out separately by each state and territory under the establishment of a cooperative scheme of legislation in 2010. As a result, each jurisdiction within Australia passed similar legislation that has been termed the National Law. Despite intention for each local jurisdiction to have roughly similar legislation, there are significant differences in the way that the profession is regulated across Australia. At present, there are 15 regulated health professions in Australia that are administered and registered by an overarching organization called the Australian Health Practitioner Regulation Agency (AHPRA). AHPRA hosts and administers the National Boards, their role being to produce policy, professional guidelines (relating for example to record keeping) and in the case of some states and territories, manage notifications (complaints) relating to practitioners. In New South Wales, the registration of dental practitioners is carried out by the Dental Board of Australia (the National Board for dentistry), but

complaints are managed by a separate regulatory entity known as the Dental Council of New South Wales. In Queensland, a similar situation exists whereby all complaints relating to dental practitioners are referred to the Office of the Health Ombudsman which will then refer all but the more serious cases back to AHPRA and the Dental Board of Australia for management. Other states and territories are currently completely administered by AHPRA and the Dental Board of Australia, but there is a growing trend for the establishment of more local complaints handling entities and agencies.

In Australia, the term dental practitioner refers to several different divisions of registered dental professional; these are dentist, dental hygienist, dental therapist, oral health therapist, and dental prosthetist. Dental hygienists provide general hygiene and periodontal treatments. They diagnose and carry out non-surgical treatment plans. Therapists provide treatment for children and adults to the extent covered by their education program. Typically, this includes the provision of restorative treatments and extraction in children, although many courses of education are currently being revised to allow an adult scope of practice. Oral health therapists are dually qualified hygienists/therapists. Prosthetists provide removable dentures and sports mouthguards without a prescription. When anti-snoring devices, immediate dentures, and additions of teeth to existing dentures are planned, a prescription from a dentist is required. In the provision of overdentures onto dental implants, a structured relationship with the

dentist is needed. For hygienists and therapists, it is mandatory for these dental professionals to work within a structured relationship with a dentist. In Australia, dental technicians and dental assistants are not regulated. Dental assistants have no requirements to undertake any specific qualifications or course of instruction to practice. However, it is a requirement for them to hold a radiation license provided by the Environmental Protection Agency if they are to expose radiographs.

Dental education is accredited by yet another agency; the Australian Dental Council. The council is responsible for ensuring standards within programs of dental education and accrediting those that may lead to registration as a dental professional or allow an endorsement on registration to provide conscious sedation.

### **How is Dentistry Provided and Paid for in Australia?**

In 2012–2013 (the most recent years where data are available) total expenditure on dental healthcare, outside of hospitals, was \$8,706 million (AUD). This was a rise from \$5,945 million (AUD) in 2002–2003. The greatest proportion of this figure was funded by individuals, footing 58% of this amount. In this same period, 50% of people over the age of five years had some level of dental coverage incorporated within their health insurance. Levels of insurance were increased for those living in inner-city areas compared to those living in more rural and remote localities. Those with higher levels of income were more likely to have insurance.

The responsibility for the provision of healthcare in Australia is shared between individual states and territories and the Commonwealth (Federal) government. The Commonwealth government funds

the Medicare scheme which provides free or subsidized access to some health services. The Commonwealth government has provided funding toward dental services as part of several different schemes; at present, funding is available toward the cost of child dental care through the Child Dental Benefit Schedule. This scheme began in 2014 and rose from the ashes of the Chronic Diseases Dental Scheme, which ceased in 2012. The Child Dental Benefits Schedule operates to offer eligible children (children aged between 2–17 years of age and whose family receive certain Australian government payments) access to dental treatment. The schedule offers access to most dental treatments, but excludes orthodontics, cosmetic dentistry and hospital-based care. The schedule allocates \$1,000 (AUD) over a two-year period for each eligible child's treatment. The Chronic Disease Dental Scheme was cancelled after expenditure under the scheme outstripped the available funding set aside by the Commonwealth government. The scheme was non-means tested and allowed recipients to receive up to \$4,250 (AUD) following diagnosis by a general medical practitioner of the existence of a qualifying chronic medical condition. Under the scheme, \$1.2 billion (AUD) was spent on dental services, treating 2% of the population. Research demonstrates that the scheme was over-utilized in New South Wales, predominantly in the form of aesthetic, fixed prosthodontics (Lam, Kruger and Tennant, 2013).

Individual States and Territories operate public dentistry clinics. Eligibility criteria differ between states and territories; New South Wales Health states on its website that it is more generous than other locations,

with 47% of the state's population being eligible for public dental services. In addition to the provision of dental services through public dental clinics, New South Wales Health operates the Oral Health Fee for Service Scheme. Through this scheme, public dental clinicians may issue vouchers to patients that they can use to access dental services from private dental practitioners outside of the public system. The Commonwealth government also offers the states and territories extra funding through National Partnership Agreements that allow more patients to be treated in the public system. Despite the extra funding that these partnership agreements have delivered for public dentistry, they have been criticized for failing to recognize and endorse preventative, oral health-promoting activities rather than curative, downstream approaches (Lalloo and Kroon, 2017). The partnership agreements also originally reduced waitlists for public dental services. However, many services have now experienced increased demand, which has subsequently increased waiting times again. In New South Wales, there were 13,555 children and 98,322 adults on the waiting lists for public dental services at the end of June 2017. In 2013, the Australian Parliament's Standing Committee on Health and Aging stated that in some areas, patients seeking public dental treatment may face a wait of between two and five years.

While there are issues with waiting times in Australian public health dentistry, the fact that there is access to oral healthcare for those without the means to fund treatment themselves is something that the public health system should be proud of. The cost of private treatment, especially complex prosthodontics, is higher than in most Organization for

Economic Co-operation and Development (OECD) countries. An implant and associated crown can be expected to cost around \$6,000 (AUD) in Australia. It is then perhaps even more impressive that in some cases, the public health system will fund implants for some eligible patients. A public dental system that does not restrict itself to the provision of simple restorations and extractions is unlikely to be mirrored in other jurisdictions outside of Australia.

Dental treatment to rural and remote communities is provided by charities that receive both government funding and private donations, Aboriginal Medical Services (Aboriginal owned and run), and by public health system clinics. Sadly, coverage is not universal, and Australia suffers from logistical challenges to provide dental and medical services to all communities. This is compounded where some from indigenous communities have developed distrust of traditional healthcare services that have been responsible for historic abuses against Aboriginal people and populations. One of Australia's most celebrated and prolific rural and remote healthcare services is the Royal Flying Doctors Service of Australia. This group provides fly-in, fly-out medical and dental services to areas where access to healthcare is limited.

## Dental Education

There are nine universities in Australia that offer qualifications that lead to graduates being eligible for professional registration as dentists. Of these, three courses are graduate entry, with students being required to have undertaken studies at undergraduate level, such as receiving a bachelor of sciences degree. These courses

The Commonwealth government funds the Medicare scheme, which provides free or subsidized access to some health services. The Commonwealth government has provided funding towards dental services as part of several different schemes; at present, funding is available towards to cost of child dental care through the Child Dental Benefit Schedule.

typically offer qualifications at professional master's degree-level. The courses at the University of Sydney, the University of Melbourne, and the University of Western Australia are all four years in duration, and graduates are awarded the degree of Doctor of Dental Medicine. Other courses operate on an undergraduate training model and take students directly from secondary education, i.e., high school. These courses are five years in duration and most award qualifications at bachelor's level. Of the nine universities that offer dental degrees, eight also offer qualifications that may lead to registration as other members of the dental team. These are joined by a further seven institutions that offer courses for non-dentist oral health professionals, but do not offer training leading to qualification as a dentist.

In Australia, there are a total of 13 dental specialties; dento-maxillofacial radiology, endodontics, oral and maxillofacial surgery, oral medicine, oral pathology, oral surgery, orthodontics, pediatric dentistry, periodontics, prosthodontics, public health dentistry (community dentistry), special needs dentistry, and forensic odontology. Registration for most specialties is achieved through further degree-level study, with most but not all specialties requiring a further three years, studying period. Many universities with a dental school or faculty offer this through degrees of doctor of clinical dentistry (D.Clin.Dent) in some specialties. The specialty of public health dentistry does not currently have an accredited training program in Australia.

## Australia and Overseas Recognition

Within Australasia, the close relationship between Australia and New Zealand is recognized through the Trans-Tasman Mutual Recognition Act 1997. This piece of legislation provides that a person registered with a profession in New Zealand will be entitled to be registered in the equivalent profession within Australia. There is ease of transfer for dental professionals between working in Australia and New Zealand.

Australia recognizes dental qualifications (leading to registration as a dentist) obtained in New Zealand, the United Kingdom, and the Republic of Ireland. Candidates for registration who have obtained a dental degree in Canada and who have passed the National Dental Examining Board of Canada examination are also eligible for registration as dentists in Australia.

There are currently no reciprocity arrangements for overseas-trained prosthetists, dental therapists, dental hygienists, or oral health therapists who are not registered in New Zealand and eligible for registration under the Trans-Tasman Mutual Recognition Act. Those dental professionals who have overseas qualifications that are not recognized must pass the Australian Dental Council assessment relevant to the division that applicant is seeking registration in.

## Professional Organizations in Australian Dentistry

The largest professional organization in dentistry is the Australian Dental Association. This organization represents the interests of dentists in Australia and lobbies the Commonwealth and state and territory governments on matters relevant to oral health and dental

While there are issues with waiting times in Australian public health dentistry, the fact that there is access to oral healthcare for those without the means to fund treatment themselves is something that the public health system should be proud of.

services. The association is split into different state and territory branches, each with its organizational structure and leadership. The association has a federal body (often referred to as the Australian Dental Association, Inc.) which is responsible for the overall steering of the entire organization.

Similar to the Australian Dental Association, dental therapists and oral health therapists have the Australian Dental and Oral Health Therapists' Association and dental hygienists are represented by the Dental Hygienists Association of Australia. Like the Dental Association, these organizations are also split into a federal and state and territory branches.

The Royal Australasian College of Dental Surgeons examines and awards postgraduate qualifications in general and specialty dentistry. The college was established in 1965 and received royal patronage in 1972. As the name would imply, the college membership comprises those from both Australia and New Zealand. The college also has conjoint arrangements with other international colleges such as the Faculty of Dental Surgeons of the



Royal College of Surgeons of Edinburgh and the College of Dental Surgeons of Hong Kong.

Within Australia, it is not essential for specialists to hold membership or fellowship with the Royal Australasian College of Dental Surgeons and the college does not have a role in conveying qualifications that lead to specialty in any area except for oral and maxillofacial surgery. The college holds memoranda of understanding with the University of Otago (New Zealand), the University of Sydney, the University of Western Australia, and the University of Queensland that allow graduates of several specialty courses to apply for the membership exam of that specialty conjointly with the exit examinations from those programs. The voluntary nature of holding membership or fellowship with the college for specialists suggests a potential for a two-tier system of specialists where it is implied that those without affiliation to the college are of lesser renown. The Royal Australasian College of Dental Surgeons, unlike many of the Australasian medical colleges, does not publish public policy statements on issues relating to the dental profession and is wholly concerned with dental education.

## International Impact

As has been previously described, the Australian dental industry enjoys a close relationship with counterparts and nearest cousins (“across the ditch”) in New Zealand. The Australian Dental Association is a member of the World Dental Federation (FDI) and is currently very proud to be the future host of the 2021 World Dental Congress in Sydney. The International Association of Dental Research has an Australia and New Zealand division which held its divisional meeting at

the University of Adelaide in September of 2017.

Australia conducts much in the way of research that relates to dental public health, but little concerning ‘discovery’ research. Australia attracts little by way of industry investment in research (for example from companies such as Dentsply), although Colgate-Palmolive Company has a long history of investment in dentally-focused philanthropy and research within Australia.

## Future Challenges

As patterns of oral health have changed and evolved, so too must the dental profession. Currently, Australia has a situation where there is a reported surplus of dentists. This putative oversupply has resulted in the Commonwealth government (partly due to the efforts of the Australian Dental Association) taking dentistry off the list of skilled occupations that decide the eligibility for certain visas. It is now difficult for overseas dentists to emigrate to Australia where applications are made purely on the basis that they are dental professionals. It is estimated that by 2020 there will be an oversupply of around 900 dentists within Australia for a population of currently 24 million.

Dental health services in Australia are currently founded on the concept that the dentist is the leader of the dental team who is required to supervise most other team members. This model of supervised practice for dental hygienists, dental therapists and oral health therapists is currently being questioned by the Dental Board of Australia. It has become clear that the increased training of dentists and the establishment of rural dental schools only go so far to alleviating issues of access to dental services

within rural and remote communities. In these situations, where the default leader of the dental team is present either infrequently or not at all is not workable. There is great disagreement within the profession as to the acceptability of the expansion of the role of mid-level dental professionals, but it would seem that change is likely to be driven by forces external to the dental profession due to the need to explore alternative solutions to improve access.

Bill Bryson referred to Australia as being a sunburnt country. Australia is certainly a land of extremes; 21 of the 25 most venomous snakes are native to Australia (perhaps another challenge). It is perhaps no surprise, therefore, that our dental profession and industry face unique challenges. Dentistry is evolving at a global level and needs to carry on this change to be able to meet the oral health needs of the 21st century. What is clear is that Australia is both light-years ahead of some jurisdictions with regards to offering public dental services to those who most need it, and is also behind in needing to ensure universal coverage at high quality throughout the population. ■

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# An OSCE Assessment Model for National Licensure

## Getting Dentistry in the U.S. Up to Speed with the Rest of Healthcare

Eric Mills, DMD

### Abstract

An objective structured clinical examination (OSCE) is a standardized, realistic sample of professional behavior involving items such as diagnosis from clinical material, identification of errors in technical work, recognition of contraindications for treatment, and even in some cases, interactions with patients, to assess competency to practice. OSCEs have been used in medicine and other health professions, and are being considered for use in dentistry, to indicate readiness for practice. This paper describes the development and evaluation of a mock OSCE at the University of Minnesota School of Dentistry designed to prepare candidates for the National Dental Board Examination of Canada OSCE, which is accepted in that state as evidence for licensure. The psychometric properties of the OSCE were found to be very strong.

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Over the course of the past several decades, there have been admirable pursuits using an objective structured clinical examination (OSCE) to assess student clinical performance in the fields of medicine, nursing, pharmacy, public health, and veterinary medicine in the United States and elsewhere. Brian David Hodges, in his 2006 article “The objective structured clinical examination: Three decades of development” emphasizes the psychometric unreliability of traditional patient-based examinations “with only one or two examiners assessing a student on one highly variable real patient case,” and the accompanying invalidity of such testing (Hodges, 2006). OSCEs are used for formative assessment in education in nursing, public health, and veterinary medicine around the world (Farahat et al, 2015; Hodges, 2006; Mitchell et al, 2009). In the field of medicine in the United States, all medical school students are required to pass an OSCE called the Clinical Skills Assessment prior to leaving school (Hodges, 2006).<sup>1</sup> In the field of pharmacy in Canada, there is a nationwide OSCE for professional licensure certification (Austin et al, 2003). In all these health science professions, the scientific literature is replete with examples of OSCE competency assessment for either formative ends—low-stakes ongoing feedback to help students understand their strong and weak areas and to help faculty members improve their instruction—or summative ends—

high-stakes evaluation of candidates at the summit of their education (Austin et al, 2003; Awaisu et al, 2010; Farahat et al, 2015; Hodges, 2006; Khan et al, 2013; Mitchell et al, 2009; Urteaga et al, 2015).

In contrast, the scientific literature in dentistry in the United States particularly has lagged in widespread use of pandiscipline OSCEs both for summative assessment and for professional licensure. The Commission on Dental Accreditation’s 2016 Accreditation Standards for Dental Education Programs leading to the DDS or DMD degree addresses assessment in its section on “education environment” and states that dental student assessment must not only be formative in nature but also summative, and that summative assessment “focuses on whether the student has achieved the competencies necessary to advance professionally.”<sup>2</sup> Over the long haul of the history of dental education, this aspect of summative assessment represents a fairly new way of thinking regarding assessment for dental students.

The idea of eliminating live patients from the clinical licensure examination (CLE) in dentistry has been a talking point for at least a decade: in 2008, the American Dental Association (ADA) Council on Ethics, Bylaws, and Judicial Affairs described in detail its ethical concerns with patient-based CLEs; in 2011, the American Dental Education Association (ADEA)

advised elimination of patient-based CLEs by the year 2015; and in 2016, the American Student Dental Association (ASDA) indicated support for non-patient-based CLEs in its white paper, “Use of Human Subjects in Clinical Licensure Examinations.”<sup>3-5</sup>

The first statewide non-patient-based clinical licensure examination option for dentistry was introduced in 2010 in the United States in Minnesota (Mills, 2016). The recent endorsement by the ADA Board of Trustees of the initiative to develop an OSCE for use as “a national exam to assess a licensure candidate’s entry-level clinical knowledge, skills and competency—while averting the potential ethical issues involved in the use of patients for dental licensure examinations” is a sign of a national shift in the profession’s thinking, a shift from talk to walk.<sup>6</sup>

The work of Ronald M. Harden and George E. Miller is supportive research for understanding this issue. Harden is the creator of the OSCE. In their original manuscript, Harden and his colleagues state that in traditional clinical examination, there are three variables: the student, the examiner, and the patient—whereas in structured clinical examination there is only one—the student—and it is this very difference that allows for greater objectivity in assessment and for long-term scientific comparison of assessment year to year as well as for curricular and faculty development (Harden et al, 1975). Miller, in describing the “shows how” level of

his clinical assessment pyramid, stresses the objective evaluation of a candidate’s ability to perform (Miller, 1990). The OSCE is generally considered to be a reliable and valid testing model for this level of the assessment pyramid.

The objective of this article is to describe in detail a method by which faculty members at the University of Minnesota School of Dentistry developed an in-house pandiscipline mock OSCE to prepare its students for obtaining a licensure component via the National Dental Examining Board of Canada (NDEB) OSCE as part of a non-patient-based clinical licensure examination. The NDEB OSCE is a time-tested valid and reliable method of objectively measuring a dental student’s competency at the summit of the curriculum (Gerrow et al, 2003). NDEB blank templates were populated with information to develop in-house mock OSCEs for three consecutive classes of dental students from 2010 through 2012. Data sources include item statistics (*item* is the classical test theory term for *question*) and examination reliability reports generated by the University of Minnesota Office of Measurement Services.

## Method

To prepare the Class of 2010 dental students to take the NDEB OSCE, faculty members of the University

In all these health science professions, the scientific literature is replete with examples of OSCE competency assessment for either formative ends—low-stakes, ongoing feedback to help students understand their strong and weak areas and to help faculty members improve their instruction—or summative ends—high-stakes evaluation of candidates at the summit of their education.

of Minnesota School of Dentistry developed, administered, and hand scored a 2010 mock OSCE. The NDEB OSCE website was studied, and 23 of its 100 extended match question blank templates, each with up to 15 answer options, were selected to make the 2010 mock OSCE about one-fourth the size and scope of the NDEB OSCE. The blank templates were custom populated with clinical information by faculty members from various disciplines. This involved writing patient histories and scenarios; fabricating silver amalgam preparations on typodonts, composite resin preparations on typodonts, and crowns on stone models; making removable partial denture tooth modifications and cast frameworks on stone models; and finding intraoral and extraoral photographs and radiographs for the diagnosis or management of caries, oral pathology, orthodontics, endodontics, and periodontics. Faculty members made a master answer-key score sheet with answers deemed absolutely correct, absolutely incorrect, and neutral (those for which uniform agreement was lacking), as well as with determined weighted fraction points for questions with multiple correct answers just as in the NDEB OSCE. For the day of the mock OSCE administration, plastic-laminated extended match question sheets were taped in place at each station with attending radiographs, casts, and models. A timer was used to indicate station shifts. Facsimile optical answer sheets ("bubble sheets") to accommodate response options "A" through "O" were used for scoring. The 2010 mock OSCE was hand scored by faculty members.

The recent endorsement by the ADA Board of Trustees of the initiative to develop an OSCE for use as "a national exam to assess a licensure candidate's entry-level clinical knowledge, skills and competency—while averting the potential ethical issues involved in the use of patients for dental licensure examinations" is a sign of a national shift in the profession's thinking, a shift from talk to walk.

To prepare the Class of 2011 students to take the NDEB OSCE, faculty members developed, administered, and scored a 2011 mock OSCE. An additional 26 extended match question blank templates were selected from the NDEB OSCE website. This made a 2011 mock OSCE with 48 questions, more than twice the size of the 2010 mock OSCE, with greater diversity across disciplines, and about one-half the size and scope of the NDEB OSCE. Ten of the original 23 questions from the 2010 mock OSCE were used completely unchanged. Another seven of the questions were essentially unchanged except that the grayscale was altered in the depictions of radiographs in four questions to be more in line with how radiographs actually look in practice, and the color

or contrast was altered in photographs of intraoral and extraoral conditions in three questions to improve how the condition would appear in a live situation. Two questions were populated with new radiographs or photographs deemed by the faculty members to be more representative of the entity being evaluated. Two questions had new photographs of the same cast models to provide better clarity. One question had new patient data in addition to photographic alteration. One question was excluded. The additional 26 new question templates were populated with clinical information submitted by faculty members. This added more diversity to the disciplines already represented in the 2010 mock OSCE plus twelve new questions in the disciplines of emergency, oral surgery, trauma, and pediatric dentistry. The set up on the day of the mock OSCE examination was the same as the 2010 examination regarding taped and plastic-laminated question sheets and the use of a timer.

Faculty members studied the answer options and decided which answers were absolutely correct, absolutely incorrect, and neutral, with weighted fraction points for questions with multiple correct answers. Whereas the 2010 mock OSCE was hand scored, the 2011 mock OSCE was computer scored. The University of Minnesota Office of Measurement Services moved the mock OSCE facsimile optical answer sheet to a scannable answer sheet in order to score data for each student examination and to generate item statistics and examination reliability reports with the intent of improving the examination. Internal consistency of the mock OSCE was tested using Cronbach's alpha. The effect of



eliminating questions from the mock OSCE was evaluated. Each question was called an item. An item analysis was performed to reveal frequencies of correct responses per item. A null-item analysis was performed to reveal incorrect response options selected per item. The analyses showed whether an item was too easy (many or all candidates answer it correctly), an item was too difficult (few or no candidate answers it correctly), there were weak negative correlation between an item and the total score (candidates who generally score well answer it incorrectly), or there was wide variability in response options (candidates may be guessing). This helped determine whether to keep an item, revise an item, reinforce content in the curriculum, or exclude an item altogether.

To prepare the Class of 2012 students to take the NDEB OSCE, faculty members used data from the 2011 mock OSCE item statistics and exam reliability reports to revamp the 2011 mock OSCE into a 2012 mock OSCE either by reworking the clinical information or by studying the NDEB OSCE website and starting fresh with new extended match question templates and answer options for those items most in need of revision. Twenty-five of the 48 questions from the 2011 mock OSCE were used again, unchanged, with the exception that eleven of these had grayscale modification to the radiographs. Another 15 of the questions used the same question information yet with revised answer options, and five of these also underwent grayscale modification of the radiographs. Three of the questions were populated with new question information (new radiographs, new stone models, new photographs, and new scenario data). Five new templates, with answer options, were selected from the NDEB

OSCE website for the remaining questions. The new templates added more diversity to the disciplines of oral pathology, removable prosthodontics, and operative dentistry. As before, faculty members made a master answer-key score sheet. The 2012 mock OSCE was administered in the same manner as the 2011 mock OSCE, complete with computer scoring, item statistics, and examination reliability reports.

## Results

Twenty-six of 101 students (26%) of the Class of 2010 elected to take the NDEB OSCE, and of these 26, 23 students (88 %) participated in the mock OSCE. The scoring of the 2010 mock OSCE revealed candidate's scores to range from 49% to 78% of questions correct.

Thirty-three of 104 students (32%) of the Class of 2011 elected to take the NDEB OSCE, and of these, 26 students (79%) participated in the mock OSCE. The scoring of the 2011 mock OSCE revealed candidates' scores to range from 35% to 69% of questions correct. A reliability analysis of the 2011 mock OSCE revealed a Cronbach's alpha of 0.637. The internal consistency could be raised to a Cronbach's alpha of 0.680 by excluding ten of the questions, to .0695 by excluding five more questions, and to 0.696 by excluding one further question; however, the last iteration was the ultimate threshold that could be reached via question exclusion. Item analysis and null-item analysis were performed. The analyses offered suggestions as to whether to keep an item unchanged (20 questions); keep an item with reinforcement of content in the curriculum (three questions); review

common incorrect response selection to determine either item revision or content reinforcement (twelve questions); revise the item or reinforce content in the curriculum because the item was too easy (five questions); exclude the item, revise the item, or reinforce content in the curriculum because the item was too difficult (three questions); revise the data content, format, or instructions (three questions); or revise the item or reinforce content in the curriculum because there was a weak correlation between the item and the total score indicating that for those who scored well, the question was answered incorrectly, and that a wide variability in response options indicated a high degree of guessing (two questions).

Thirteen of 109 students (12%) of the Class of 2012 elected to take the NDEB OSCE, and of these, all 13 students (100%) participated in the mock OSCE. The scoring of the 2012 mock OSCE revealed candidate's scores to range from 48% to 74% of questions correct. A reliability analysis of the 2012 mock OSCE revealed a Cronbach's alpha of 0.667. Calculation of this initial Cronbach's alpha iteration was performed excluding six items for which all students received full credit and one item for which no students received any credit. The internal consistency could be increased to a Cronbach's alpha of 0.748 by excluding 14 additional questions. Further exclusion of questions would decrease the reliability.

A reliability analysis of the 2012 mock OSCE revealed a Cronbach's alpha of 0.667.

## Discussion

The mock OSCE developed for the Class of 2010 was prepared on the heels of new legislation for students having little to no experience taking an OSCE. There was a steep need for increasing the learning curve of the faculty members about what an OSCE is, as well as a time crunch for developing, administering, and scoring one. It was only about one-quarter the size of the NDEB OSCE, it did not represent as diverse a question base as the NDEB OSCE, and it was hand scored and yielded no data for item statistics. Nevertheless, it was excellent for acquainting students with taking an OSCE, as well as for teaching faculty members about extended-match questions and current standards of item writing.

The mock OSCEs developed for the Classes of 2011 and 2012 were about half the size of the NDEB OSCE, they more closely approximated the diversity of the question base as the NDEB OSCE, and they were computer scored and underwent analyses for item refinement. It was the Office of Measurement Services that recommended using Cronbach's alpha, a statistical tool of classical test theory, to provide an estimate of internal consistency reliability of the examination. Cronbach's alpha was a new concept to most of the faculty members involved in mock OSCE development, but the Office of Measurement Services made it easy to understand how it could be used to refine the examination. Cronbach's alpha levels above 0.700 are generally considered to be acceptable.

In the 2011 mock OSCE, despite the small sample size of the data set ( $n = 48$ ) and the fact that only one testing period is represented, the internal consistency, without item exclusion, is of moderate comparability to that of

the NDEB OSCE's range of 0.69 to 0.74 measured over a six-year period. With item exclusion, the internal consistency of the 2011 mock OSCE may be brought into the low end of the range of the NDEB OSCE. The 2012 mock OSCE was again of moderate comparability to that of the NDEB OSCE. With further item exclusion, the internal consistency of the 2012 mock OSCE may be brought into the high end of the range of the NDEB OSCE. The final set of 27 items in the 2012 mock OSCE represented an acceptable core of items to prepare candidates for the NDEB OSCE. Further development of mock OSCEs with refinement of items via future data collection could yield further increases in internal consistency.

All three mock OSCEs posed problems with accurate representation of intra-oral and extra-oral conditions and of radiographs on paper. Faculty members learned that it was better to print images on a personal computer on which one could more finely control the quality of the paper, the color for photographs, and the grayscale for radiographs than to work with a professional printer who is not a dentist, and to whom the subtleties of the image may be difficult to convey. This was especially critical with the radiographs. For all three of the mock OSCEs, the radiographs were digital images of scanned traditional photographic film radiographs, which are difficult to transmit to paper images. This may still be a problem until digital radiographs on OSCEs are presented digitally on a computer screen.

A logistical concern with staging the mock OSCE was the maintenance of the silver amalgam preparations on typodonts, composite-resin

preparations on typodonts, stone models with crowns, and stone models with removable partial denture tooth modifications and cast frameworks. Although candidates were instructed to use only plastic probes furnished during the examination to explore margins, some casts were altered with graphite pencil points that the candidates unwittingly used for such purpose. The proctors of the mock OSCE were trained to monitor the candidates for such behavior. Sometimes models were able to be restored to remove graphite markings. Irreparable damage would necessitate starting over with a new model.

The three mock OSCEs provided a common forum for a discussion about assessment between faculty members in different disciplines. As each new question was developed by a content expert/specialist in a discipline, general dentist faculty members were queried as to whether they themselves could answer the question correctly. They also considered whether the question was relevant to the knowledge of a graduating general dentistry student.

The NDEB OSCE is designed to measure a candidate's performance at the summit of the curriculum, in the last months of dental school. The mock OSCEs were administered to students somewhat before that time, about five months before graduation. As such, they may not have received all of the clinical-based education necessary to build critical thinking and judgment in all disciplines.

Efforts to further develop the mock OSCE were halted: in 2013, the NDEB requested that candidates use an online NDEB mock OSCE in order to regulate and equilibrate preparation in Canada and the United States. Use of the NDEB OSCE as a means of evaluating the summative competency of individual candidates at the School

of Dentistry in Minnesota from 2014 through 2016 was unsuccessful due to an inability to accurately remediate individual candidates who failed the examination: itemized detailed analyses regarding individual candidate failure did not arrive until several months after graduation.

OSCEs have been used successfully to assess clinical competence in medicine, nursing, pharmacy, public health, and veterinary medicine in the United States and elsewhere at varying formative and summative levels, even as barrier/exit examinations in pharmacy. A method of inhouse pan-discipline mock OSCE development can be used either as a paradigm for OSCE development by any dental school faculty for use in formative or summative evaluation, or as a starting point for a national dental licensure OSCE as the ADA recently suggested. There is value in this enterprise primarily as a start point for the systematic developmental process and secondarily for the broad scope of the pan-discipline assessment product. Since the time of developing the in-house mock OSCE in Minnesota, there has been significant evolution in OSCE development regarding the use of patient-simulated scenarios and computerized virtual fields.

The success of the use of such a time-tested, valid, and reliable method of objectively measuring the "shows how" level of Miller's pyramid of clinical assessment for a national dental licensure OSCE is dependent upon acceptance by state boards of dentistry. Efforts to gain acceptance of the OSCE in Minnesota's neighboring states failed, and a licensure examination having little real value or use in terms of portability is meager

incentive for students considering licensure options. The recent endorsement by the American Dental Association for the development of one nationally—a pilot examination to be ready by 2019 and the actual examination to be in place by 2020—infuses new hope into the realm of clinical assessment. The American Dental Association's Dental Licensure OSCE proposes to increase licensure portability, eliminate the ethical concerns of patient-based CLEs, and provide a more accurate method of protecting the public than patient-based CLEs.

## Conclusion

Just as OSCEs have been used as a valid way to assess clinical competence in medicine, nursing, pharmacy, public health, and veterinary medicine in the United States and elsewhere at varying formative and summative levels as well as a component for professional licensure, so too can they be employed in dentistry. A mock OSCE was developed by dental school faculty members as an assessment tool for preparing dental students for the NDEB OSCE as part of a nonpatient-based CLE. Repeated testing afforded opportunity to refine the mock OSCE to be increasingly reflective of the NDEB OSCE. The process of developing the mock OSCE had the advantage of bringing together faculty members from different disciplines to a project that raised awareness of better question writing for assessment in dentistry. Such an endeavor is in line with summative assessment of

A reliability analysis of the 2012 mock OSCE revealed a Cronbach's alpha of 0.667.

comprehensive critical thinking and clinical reasoning at the height of the dental-school curriculum without the ethical concerns of testing on live patients for licensure. This method may be used as a starting point model for a national dental licensure OSCE.

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# Exploring Options for an Ethical Challenge

## Three Shades of Grey

Rebeca Engel

In Canada, the College of Registered Dental Hygienist of Alberta<sup>1</sup> (CRDHA) has outlined a comprehensive code of ethics that can be used in conjunction with Alberta's Health Professions Act<sup>2</sup> (HPA) to guide dental hygienists who find themselves in a challenging ethical position. Using these two resources, I will demonstrate how a dental hygienist can navigate an ethical problem. Following is an adaptation of M. L. Hospenthal's Case 28 for Breemsterboer's textbook, *Ethics and Law in Dental Hygiene*. I will use it as the scenario to illustrate ethical problem solving.

"Shari [whose part I will take in this analysis] is a dental hygienist who has been working for the past three years at Dr. Merriweather's practice. He is a wonderful employer who fosters a positive environment, provides benefits, and, most importantly, practices quality and ethical dentistry. He allows his staff to work their full scope of practice within the law.

Dr. Merriweather is an avid bicyclist and had been planning for months to leave early on a Saturday morning for a four-week long bike tour in Spain. Shari has scheduled part of the four weeks with a temporary agency and realized on Saturday afternoon that she forgot her loupes in her operatory room. As she and all the employees have an office key, she decided to swing by the office after her morning meeting on Sunday to collect her loupes.

As she drives in, she notices Katrina's car in the parking lot, the

new, lead dental assistant. Katrina has been with the practice about three months. Shari enters through the back door of the office and yells a cheerful greeting to Katrina. As Shari walks around the corner, she sees Katrina working on a patient.

There is a full restorative kit open, and local anesthetic carpules and syringe appear to have already been used. The patient has a rubber dam on teeth #13 through #23, and Katrina is holding a high speed hand piece. Katrina looks at Shari and says, "Oh hi! I was just placing a filling for my friend because she doesn't have the money to go to the dentist. It was just a small chip." Katrina turns back to the patient to continue the treatment. Dental assistants are not educated or allowed by law to perform local anesthetic, prepare teeth, or place and finish restorations in her province.<sup>3</sup>

For this scenario, three possible courses of action for the dental hygienist will be explored and weighed against one another in terms of satisfying moral and ethical obligations.

- Option 1: Stop the assistant from performing treatment and then dismissing the patient.
- Option 2: Hygienist performs and oral examination and places a temporary restoration.
- Option 3: Advise the patient to seek appropriate, licensed dental care and report the assistant.

The benefits of perusing Option 1 is that adherence to the principles of

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beneficence, autonomy, integrity, and accountability would have been adhered to. However, Option 1 could put pressure on the relationship between the hygienist and the assistant, or the assistant and her friend. In the long term, the assistant may lose her job, license, and reputation which were providing her with the means for a living wage.

Option 2 allows the hygienist to avoid conflict, but minimally requires the principle of accountability be upheld: reporting the ethical breach of another health care professional to the appropriate complaint director of the respective college.<sup>1</sup> The friend will receive restorative dental care for free since finances were low. The assistant's unethical behaviour will eventually get addressed, however, the patient and assistant remain at risk for injury. Despite the advantages, the hygienist fails to completely adhere to the principles of beneficence, autonomy, integrity and accountability.<sup>1</sup> The claim made by the hygienist will have no merit and could be disputed due to lack of documentation. The assistant will also be reprimanded accordingly by her regulatory authority, but also risks damaging her professional reputation and source of income.

Option 3 ultimately highlights avoidance by requiring the hygienist to entirely omit the acknowledgement of an ethical violation. This will allow the patient to receive free restorative dentistry, and the assistant's career will not be under threat. Consequently, none of the ethical principles are adhered to, and both the patient and the assistant remain at risk for injury. The assistant may also continue this behaviour with more friends or unknowing patients.

When balancing between Options 2 and 3 only, I would argue that the hygienist experiences an ethical violation. As per the definition provided by CRDHA's codes of ethics, an ethical violation occurs when the patient's right to fundamental duties are compromised. By failing to pursue Option 1, there is an unnecessary risk to the patient's health. Since it is within the hygienists' scope of practice to assess, diagnose, plan, implement, and evaluate the situation, Option 1 holds the most beneficial for the patient in regards to health and safety. Considering the current code of ethics and legislation, Option 1 remains the most beneficial for the professional parties involved despite the possibility for conflict or confrontation. This is due to the risk for limitations for the assistant being heavily outweighed by the benefits for the patient.

The term ethical violation is used to describe the hygienists' ethical challenge because they are at risk of endangering the patient and the assistant when avoiding upholding the code of ethics using duties that are within their scope of practice. If the hygienist was at risk to endangering himself or herself, then the term ethical distress could be used.

The first option holds the potential to keep the patient the safest, but could potentiate an altercation between the dental assistant and the hygienist. The friend could also refuse to have the treatment stopped. We can suspect that it is very likely that both the dental assistant and her friend know what they are doing is unethical, because the justification for treatment was related to low finances. Therefore, we can make the minimal assumption that the friend knows she is stealing supplies for said treatment. This assumption can remain valid whether

the friend is informed of Katrina's scope of practice or not.

If the unethical appointment was dissolved promptly in a calm manner, then the hygienist would have access to assess the oral cavity. The hygienist's responsibility for beneficence will be fulfilled by the intentions of initiating an intervention. The hygienist can then discuss the pros and cons of involving a licensed dental, advise the friend of an office that would be more financially suitable, and then make comprehensive signed documentation. The friend does however reserve the right to decline signing any notes or being exposed to radiation even if he or she chooses to consent to having a temporary filling placed. By acknowledging this right to refusal, the hygienist continues to uphold principle of autonomy<sup>1</sup> as earlier discussed. Not only does informing the friend that he or she should seek qualified dental care uphold the principles of beneficence in regards to informed choice, this approach also upholds the subprinciple of accountability: making a referral to an appropriate professional.<sup>1</sup> Notifying the employer and the dental assistant association would be the next step so that the assistant could be suspended accordingly.

The second option could be sought if the situation could not be resolved by the hygienist. For example, if the assistant refused to stop, hostility arose, and the hygienist began to fear for their own safety. However, by avoiding conflict, the patient and the assistant are both at a high risk for injury. According to the College of Alberta Dental Association<sup>5</sup> (CADA) the assistant scope of practice lacks formal education with high-speed hand pieces, restorative procedures,

and local anesthetic administration. An additional contraindication to the second option would be that the hygienist fails to fulfill the sub-principles of autonomy, integrity, and accountability. The hygienist may feel like her or she has been involved in an ethical violation due to failing to work with the assistant in way that would provide the patient with optimal and ethical care. Despite the principles of beneficence, autonomy, integrity and accountability to the patient being violated, the sub-principle of integrity is fulfilled when the hygienist reports unethical care to his or her employer and the appropriate regulatory authorities.<sup>1</sup>

The third option allows for confrontation to be completely avoided. Failing to interfere with the ongoing treatment puts the friend and assistant at a high risk for trauma. None of the code of ethics principles are adhered to, likely leaving the hygienist feeling unfulfilled ethically, with the addition of questioning his or her own morality. A person may argue that morally, it would be better for the assistant to not be reported to the authorities due to the sensitive task of being suspended. This may be a valid opinion if the hygienist values the assistant's needs over the friend's health and safety. This option could also be justified because the friend is receiving free dental care which show sensitivity to the patient's financial situation. When comparing these values to the CRDHA's code of ethics, the option has very limited merit, and is easily outweighed by the merit of Options 1 and 2.

The option I would prefer if I was in a similar situation would be Option 1 since it holds the greatest opportunity for safety despite the higher risk for confrontation. By working within the scope of practice,

Awareness of everyone's scope of practice in a dental office is crucial to uphold accountability between professions.

"I cannot let you proceed due to regulations and the ethical circumstance this puts me in. I understand that your friend is short on finances, but this can be a very dangerous solution, not only physically, but legally as well."

the hygienist can prevent the friend from enduring possible injury. Intervening allows for the hygienist to make comprehensive notes to ensure that the assistant is disciplined appropriately. It would also be within the hygienist's best interest to have the friend write a report of what happened, sign and date it. A post-operative x-ray would also be helpful for record management, and would hold the assistant and hygienist accountable for their interventions, and give their reports merit.

From the patient's perspective, Option 1 would also be the best choice regarding safety. With the consideration of friendship and finances, Option 1 may have the most negative effects, therefore based on the patient's values, they may have varying opinions or reactions should the hygienist choose Option 1.

Option 1 is most justified because the dental hygienist adheres to all of the said principles above which would be otherwise violated or not applicable. As supported by the health professions act, it is within the hygienist's scope of practice to place temporary fillings, take x-rays and perform their intraoral duties without the supervision of a dentist. Working within the dental hygienist's scope of

practice serves the patient best in terms of the accountability to the patient. In comparison, it is not within the dental assistant's scope of practice to perform their duties without the supervision of a dentist in the office as stated by the Dental Assistants Regulation of the HPA.<sup>4</sup> By upholding the hygienist's responsibility for accountability, the subprinciple of beneficence, to ensure the needs and safety of the patient is respected in the presence of unethical care, will also be subsequently upheld. The patient will also be protected by the hygienist's responsibility for autonomy when the hygienist informs the patient of his or her risk for injury, options regarding licenced and affordable dental treatment, and outlining the details of treatment that will be delivered at that time. The subprinciples of integrity will also be upheld when the hygienist chooses to intervene in a calm professional manner. This also allows for the facilitation of safe and competent care provided to the patient, therefore promoting professionalism as a dental hygienist who is adhering to the standards set by the regulatory organizations and government law.

In a calm manner, I would ask the assistant if I could pull her away for a minute, not negotiating with convenience. This will allow me to avoid creating panic from her friend,

Having Katrina write a letter, self-reporting her misconduct, would not be something I could force her to do, but it would allow her to remain dignified and take responsibility for her behaviour.

since I do not know how informed the friend is in regards to Katrina's scope of practice and would also allow Katrina to give me a complete explanation. Regardless of perspective, Katrina is working beyond her scope of practice, therefore I would explain that to Katrina:

"I cannot let you proceed due to regulations and the ethical circumstance this puts me in. I understand that your friend is short on finances, but this can be a very dangerous solution, not only physically, but legally as well. I would hate to see a friendship end due to any legal consequences that could happen from physical damage. As you know, sometimes teeth develop problems without explanation, and if something were to happen to this tooth, whether it was your fault or not, you would not be protected by the association's or dentist's malpractice insurance since you were working outside of your scope of practice. Given what I now know, we are going to go explain this to your friend. I will place a temporary filling, take an x-ray, and then write a complete set of notes, which your friend, yourself, and I will all sign. By being this thorough and you being compliant with my plan, you will not look as negligible in comparison if you were to resist my plan for action."

Given that Katrina does not resist, and once the friend is dismissed, it

would be in the Katrina's best interest to write a letter to her employer and to the association to outline the course of events and the ethical violation she was involved in and how this was an ethical distress for myself. Having Katrina write a letter, self-reporting her misconduct, would not be something I could force her to do, but it would allow her to remain dignified and take responsibility for her behavior. This will also give her the opportunity to explain her perspective and the possibility of being in an ethical dilemma herself. Regardless of what Katrina chooses to do after the friend is dismissed, I would contact the dentist, outlining the events and actions taken. If Katrina chooses not to contact her association, ethically and morally, I would contact her association because I would feel responsible to ensure that her college reprimands her accordingly for the safety of future patients under her care.

Although a difficult decision, the long-term effects would be most minimal with choosing Option 1. If Option 3 was chosen, there would always be the hanging possibility of confrontation weighing on my conscious. Option 2 would hold less weight on my conscious, but if I felt confident enough to address the problem both clinically and professionally, there would not be much room for hesitation to intervene.

Given the events of the scenario, one could conclude that outcomes

could vary greatly given the unpredictability of the persons involved. This variability could easily change the ethical violation into distress, which involves impactful and lasting consequences for the hygienist. Awareness of everyone's scope of practice in a dental office is crucial to uphold accountability between professions. This accountability between dental professionals could outline the framework in which members of each dental profession becomes confident in their own skills, upholds a standard of care and sets respectable professional boundaries between co-workers. I propose that dentists, dental hygienists, and dental assistants work intra-professionally to motivate each other in the professional development of their scope of practices. Ultimately, this collaboration will define their roles as healthcare providers, build respected boundaries and uphold their responsibility to the public. I believe that this approach of collaboration would result in fewer incidences of ethical problems, and if not, this approach would minimally instill the confidence in the hygienist to choose Option 1 every time. ■

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# The Vulnerable Patient

## An Ethical Dilemma

Timothée Cousin

Mr. M is a 70-year-old man who presents to me for a prosthodontic evaluation during my third year as a dental student of the University of Washington School of Dentistry. Mr. M has a noticeable limp and explains that he is currently suffering from sciatica and is waiting for it to pass on its own. As I begin gathering Mr. M's health history, I notice several inconsistencies in his reporting and note that Mr. M is slurring his words and lacks coherence in his speech. I suspect that he may be under the influence of alcohol and begin inquiring. Mr. M claims that alcohol helps with the pain from his sciatica. As I continue with our consultation, I explain that I cannot provide treatment to patients under the influence, but that I am willing to continue with the appointment if he understands that no treatment will be rendered today and remains calm and cooperative. At the end of the appointment, I inform Mr. M that he needs to come sober to his next appointment and that I will be going over all that was discussed today at his next appointment.

One week later, Mr. M returns to the dental clinic. While he appears sober, I notice that his limp has gotten worse. He admits that his sciatica has worsened, but still, Mr. M refuses to see a physician and reaffirms that his condition will heal on its own. He then tells me that his chief motive for coming to the school is to have four broken porcelain crowns on #6, 7, 10, and 11 replaced. He explains that he has not had regular dental care, that

the last time he received any kind of dental treatment was two years ago. At that time the treatment was performed in a span of two full days. He said that soon after, the crowns began to chip catastrophically, exposing the underlying dentin, making him look like a "bum," to put it in his own terms, and cutting his tongue. Mr. M did not seek further dental treatment until his visit with me. Upon seeing the x-rays, I realize that Mr. M has had full-mouth rehabilitation and that only the mandibular anterior teeth are untouched. An evaluation by the supervising prosthodontist reveals that the crowns were made of a material that is no longer used in this capacity due to its poor clinical success and that the choice of material is likely to be the reason behind the many chips and fractures in Mr. M's crowns.

I proceed with a periodontal evaluation of Mr. M's mouth and realize that he suffers from periodontitis with deep pockets and subgingival calculus in all four quadrants. He mentions that while his last dental exam was two years ago, he's never been informed of having gum disease. I tell Mr. M that while I cannot attest to what his previous dentist has told or recommended to him, it is my duty to provide him a summary of my findings and evaluation of his oral status. He tells me that

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periodontal treatment is not his priority, refuses my recommendation for periodontal treatment, and insists on only wanting the crowns replaced.

Finally, Mr. M also complains that his mandibular partial has been rocking ever since its delivery two years ago by the same dentist and that it has created some significant sore spots and “messed up” his bite. I inform him that school policy prohibits me from adjusting appliances that were not originally delivered at the school and that I would need to make him a new one later on down the road. Mr. M is infuriated and claims that he will take care of the partial himself at home with a set of pliers if I just deliver his crowns.

### Summary of the Ethical Issues at Hand

This case presents a plethora of ethical issues, including those related to:

- Treating patients under the influence, including obtaining consent
- Self-neglect regarding untreated conditions such as the patient’s sciatica
- Quality of the services rendered by Mr. M’s previous dentist
- The patient’s seemingly faulty decision-making, including his refusal to treat periodontitis or sciatica
- Consequences which may result from the school’s policy of prohibiting its student dentists from adjusting appliances fabricated elsewhere

### Relevant Washington State Laws

Revised Code of Washington (RCW) 74.34.020(19) of the Washington’s dental practice act provides definitions for the terms “vulnerable adult” and “self-neglect.” According to this law, a vulnerable adult may be anyone who is 60 years of age or older, “has the functional, mental, or physical inability to care for himself or herself,” and who “self-directs his or her own care [...]” Furthermore, under this law, “self-neglect” is defined as a “failure for a vulnerable adult, not living in a facility, to provide for him/herself the [...] services necessary for the vulnerable adult’s physical or mental health.” It can clearly be argued that Mr. M can be deemed a vulnerable adult who takes part in self-neglect. Another section (RCW 74.34.035) of the same chapter of the law mandates that any reasonable sign or cause to believe that neglect or exploitation of a vulnerable adult has occurred be reported immediately. It is therefore not unreasonable to contemplate reporting Mr. M’s previous dentist given the expert findings of the UW’s prosthodontist.

RCW 11.88.010(a)(e) defines the laws relating to patients who may be considered incompetent. According to the law, a person may be deemed incompetent “by reason of [...] habitual drunkenness or [...] caring for himself or herself.” Mr. M’s decision to present under the influence of alcohol to his first appointment can be argued to be a display of self-neglect and incompetence. However, the key element rests in the Mr. M’s declaration that he uses alcohol to reduce the pain induced by his sciatica, a condition for which he refuses to obtain a professional evaluation. While the law prohibits “age, eccentricity, poverty, or medical diagnosis alone” from being sufficient

to justify a finding of incapacity, the patient’s overall attitude towards self-care, his lack of understanding of the implications of his treatment decisions and oral health needs, as well as his age and usage of alcohol for therapeutic purposes do point towards a possible application of this law.

Should the patient be determined to be incompetent, there are rules and regulations governing who may be authorized to provide consent. These persons are defined in RCW 7.70.065. It would therefore be the treating dentists’ responsibility to determine whether Mr. M is capable of providing fully informed consent, even at appointments where he is sober, and to further determine who may be able to provide consent for treatment.

RCW 18.130.080 and RCW 18.130.180 describe the implications of dentists who may have displayed incompetence, negligence, or malpractice thereby resulting in injury to a patient and creating an unreasonable risk. Since Mr. M’s previous dentist is liable for the quality of the treatments rendered, I would be under the obligation to further inquire about the circumstances surrounding Mr. M’s treatment two years ago, as well as report the grievances to a regulatory body, either a Peer Review Committee or the Dental Quality Assurance Committee (DQAC) depending on the previous dentist’s affiliation status with a local dental society.

### ADA Principles of Ethics and Code of Professional Conduct

#### Patient Autonomy

Section 1A of this set of principles dictates that the patient should be involved in the treatment decisions,

which in turn must be presented in such a manner that the patient understands the information given and its implications. While Mr. M is stubbornly decided on what he does and does not want, his judgement and ability to care for himself seem clouded. Mr. M refuses to abide by my professional recommendations, which I believe to be in the patient's best interest, and continually displays cherry-picking behavior by electing to proceed only with the treatment recommendations which align with his own desires. I firmly believe that treating nothing but the defective crowns will result in failure of the dentition in subsequent years as a result of Mr. M's uncontrolled periodontal disease, and will ultimately cause more harm than good.

Furthermore, Mr. M's habit of refusing professional advice seems to be a central issue with regards to his care. For example, he continues to suffer from his sciatica, but appears to treat it with a remedy which may harm him further. These decisions, along with his intoxicated demeanor at our first appointment, are indications that Mr. M may not be in a position to assume self-governance and that a person should instead be appointed to aid Mr. M in his overall care. This move would be in agreement with the laws on vulnerable adults and may help Mr. M receive the care he ultimately needs.

On another note, Mr. M could be advised to obtain a copy of his records from his previous dentist, as detailed in Section 1B of the ADA code. Doing so would help elucidate the circumstances surrounding the manner in which treatment was delivered two

years ago. This might include findings of periodontitis with no associated diagnosis, reasons behind the choice of type of porcelain, and any subjective findings the previous dentist may have noted on Mr. M's demeanor.

### Nonmaleficence

Under this principle, a dentist is obliged to provide Mr. M treatment that will only benefit and not harm him. This principle comes to play in several aspects of the case. The previous treating dentists may have violated this principle in providing substandard or even unnecessary prosthetic care and in failing to diagnose the presence of periodontal disease. It might have been appropriate, under Section 2B of the code of professional conduct to consult a specialist.

I am under an obligation under this principle to inform Mr. M of the problems I have identified in his oral condition and their likely consequences, as well as possible remedial alternatives. Further, I have a positive duty, under the principle of justice discussed below, to follow up with the previous treating dentist and with those who can determine whether Mr. M is a vulnerable and self-neglecting adult. Since Mr. M has consulted me with regards to his dental treatment, it is my duty to also protect the patient from harm. This not only applies to my own decision-making, but also includes self-harm. As such, it is my obligation to refuse to treat Mr. M should he display signs of intoxication. I must also refuse to deliver Mr. M's new crowns until his periodontal condition is addressed through periodontal treatment.

In addition, it is my duty to prevent Mr. M from potentially harming himself through neglect or self-

While the law prohibits "age, eccentricity, poverty, or medical diagnosis alone" from being sufficient to justify a finding of incapacity, the patient's overall attitude towards self-care, his lack of understanding of the implications of his treatment decisions and oral health needs, as well as his age and usage of alcohol for therapeutic purposes do point towards a possible application of this law.

Mr. M is infuriated and claims that he will take care of the partial himself at home with a set of pliers if I just deliver his crowns.

medication. I should therefore address the patient's neglect and dangerous self-treatment habits of his sciatica, either by urging Mr. M to involve a relative or person in his care or by contacting a government agency to evaluate Mr. M as a potentially vulnerable adult.

Since the patient is also experiencing pain as a result of his sharp crowns, it wouldn't be unreasonable to smooth the sharp edges, relieve the patient of pain, and continue the discussion on whether or not to proceed with treatment and under what circumstances. This would abide by this principle of not doing harm, by preventing future harm from occurring. This gesture may have the consequences of making Mr. M a patient of record and thus altering my responsibility as a provider of care.

Finally, at what point does the school's policy of not tinkering with appliances made by outside dentists begin to violate the principle of nonmaleficence, especially if the appliance is causing the patient harm ("my bite is all messed up")? Having identified the over-contoured points on Mr. M's mandibular prosthesis, I knew what needed to be done to make the appliance tolerable for Mr. M. However, the school's policy (established for liability reasons) prevented me from doing so, thereby indirectly encouraging Mr. M to resort to homemade fixes.

### Beneficence

Under this principle, the dentist has a duty to act for the benefit of others, "primarily for that of the patient and the public at large." The principle, however, goes on to state that "most important is the competent and timely delivery of dental care within the bounds of clinical circumstances presented by the patient, with due consideration being given to the needs, desires, and values of the patient." It is difficult to inquire on the ways in which this principle may not have been upheld by the previous dentist, given the lack of data on the circumstances surrounding Mr. M's case, aside from his own testimony and rendition of events. However, it has many applicable aspects with regards to my approach to Mr. M's treatment. For one, my duty lies in ensuring that whichever treatment option I will agree to with Mr. M is an option consistent with the standard of care. Section 3E of the code requires that dentists report signs of abuse and neglect (as in child abuse) to the proper authorities. This might be extended to include self-abuse.

If I were the patient's dentist of record I would be under the obligation of noting and reporting any signs of neglect, including self-neglect, on behalf of Mr. M if I determine that he be considered a vulnerable adult. His inappropriate use of alcohol, refusal to seek treatment for a disabling condition (sciatica), refusal to comply with treatment recommendations, and tendency for self-medication (adjusting his own partial), in addition

to his elderly age, are all indicators of self-neglect and make a strong case for further action, consistent with the principle of beneficence and the law.

### Justice

I believe that my decision to continue conversing with Mr. M, yet refusing to render treatment, despite his apparent impaired state, was consistent with the principle of justice which states that the "dentist's primary obligation include dealing with people justly and delivering dental care without prejudice." Because Mr. M was compliant with my line of questioning and did not display any sign of aggressive or uncooperative behavior during that first visit, I determined that it would only be fair for me to see Mr. M and instruct him to return in a more coherent state of mind. During that first appointment, I was able to get a sense of Mr. M and his situation which aided my judgment and treatment decisions in the subsequent appointment. On the other hand, I could very well have applied Section 4A of the code which empowers dentists to exercise reasonable discretion in selecting patients. It could be argued that refusing to accept Mr. M as a patient simply based on his level of intoxication during his first appointment is warranted and appropriate.



Section 4C of the code is especially relevant to this case. Under this section, a dentist is “obliged to report to the appropriate reviewing agency [...] instances of gross or continual faulty treatment by other dentists.” It is clear that the treatment rendered by the previously treating dentist, at least with regard to the material used for the crowns, was substandard. While it is my responsibility to inform Mr. M of the state of his oral health, my comments with regards to his previous dentist must not unjustly imply mistreatment.

### Veracity

Under this principle, the “dentist has a responsibility to be honest and trustworthy and respect the position of trust in the dentist-patient relationship.” I believe that my attitude toward Mr. M has been nothing short of truthful and representative of the ADA’s code of professional conduct. The previous dentist’s judgment, however, could be called into question, after an inquiry as to the circumstances surrounding his treatment decisions is completed.

### Conflicts between Laws and Ethical Principles or among Individual Ethical Principles

As I reflected on the case at hand, one conflict stood out above all others. There was a tension between beneficence and patient autonomy. While the dentist has the obligation to promote oral health under the principle of beneficence, he or she must also respect the patients’ rights to self-determination and confidentiality. It is clear to me that Mr. M came to me knowing what he wanted. However, his impaired ability to make treatment decisions which are safe and reflect the standard of care undermines his autonomy. So while the patient has a right to autonomy, the dentist’s

obligation to do good in the face of harmful behavior and caustic tendencies directly conflicts the patients’ rights to self-determination. In fact, the same can be said with regard to the laws regarding vulnerable adults whose ability to provide consent is taken away, and with it, their ethical right to autonomy. A resolution to this conflict lies mainly in the dentist’s judgment of the circumstances, weighing the benefits and disadvantages for all decisions. It is equally true that a judgment of capacity for self-determination will ultimately be made by the legal system, dentists must participate in but cannot be the sole arbiters of such matters.

Another conflict which I see in this case is the disconnect between the principles of nonmaleficence and beneficence, and the school’s policy with regard to adjustments needed for the patient’s mandibular partial. While the school’s policies are clearly established for liability purposes, they neither allow the student to do good (beneficence) by “providing competent dental care” nor permit him or her to prevent harmful circumstances from occurring (nonmaleficence), since the patient explicitly stated that he will be taking a pair of pliers to his appliance.

### Proposals for Resolution: How to Proceed

With regard to addressing issues related to Mr. M’s previous dentist, one could:

- Contact Mr. M’s former dentist and inquire about the circumstances that may have led to the treatment decisions.
- Suggest that Mr. M contact his previous dentist and request his patient records.

- Contact the dentist to inquire on the circumstances and submit the case to the Dental Quality Assurance Committee if that dentist is not a member of a local dental society or to a peer review board if the dentist is a member of a local dental society.

I believe that the third option is most appropriate in this case. While the dentist may be given the benefit of the doubt with regards to his approach of Mr. M’s periodontal disease since the extent of the disease at the time of treatment remains unknown, it is difficult to ignore the egregious errors committed in choosing substandard and clinically unacceptable material in the delivery of fixed and removable appliances.

With regard to addressing Mr. M’s state of impairment at his first appointment, one could either:

- Provide recommendations for other dentists before the patient becomes a patient of record, thereby exercising the principles outlined in section 4A of the code with regards to patient selection in a lawful manner. A recommendation should be made to present sober at subsequent appointments.
- Question the patient and make a judgment call on his state of mind after an evaluation of his ability to understand the threat he may pose to others in the office, and of his cooperativeness. Proceed with an evaluation but do not render treatment that does or does not require consent.

I believe the second option to be most appropriate. Since Mr. M was calm and cooperative during his first appointment despite being intoxicated,

Since Mr. M's previous dentist is liable for the quality of the treatments rendered, I would be under the obligation to further inquire about the circumstances surrounding Mr. M's treatment two years ago, as well as report the grievances to a regulatory body, either a Peer Review Committee or the Dental Quality Assurance Committee (DQAC) depending on the previous dentist's affiliation status with a local dental society.

it only seemed just to provide the patient with respect and calmly inform him that no treatment will be rendered on this day and that the appointment will need to be rescheduled to another time.

With regard to the issues of vulnerability, self-neglect, and consent, one could:

- Continue to work with Mr. M until a mutually agreed-upon treatment plan is determined.
- Ask Mr. M to return to the office at a later date with a relative or friend to aid in communicating the extent of Mr. M's condition and change his habits of self-neglect and harmful tendencies.
- Report Mr. M to a government agency to have his situation evaluated and his ability to consent clarified.

I believe that the second and third options are equally appropriate depending on the circumstances. Being a believer in taking incrementally aggressive measures, I first asked Mr. M to return to see me at a later date with someone he trusted to help make decisions about his care. Only if that option did not suffice in helping Mr. M, resolve not only his dental problems but also his sciatica and alcohol use, would I progress to the third of recommending that Mr. M be evaluated to be considered a vulnerable adult unable to consent for himself.

With regard to issues related to the consequences that may result from the school's policy of prohibiting its student dentists from adjusting appliances fabricated elsewhere, one could:

- Do nothing and abide by the school's policy, allowing Mr. M to adjust his partial at his own risk.

- Have Mr. M sign a waiver indicating that the school will not be liable for any deleterious modifications made to his partial.
- Inform Mr. M that he should stop wearing the partial altogether and that a new one should be made by the school of dentistry.
- Modify the partial under the supervision of a prosthodontic faculty member and hope that the patient is satisfied with the changes.

This issue was difficult to address. If I had modified the partial, Mr. M would immediately have become a patient of record and the school would become responsible for the outcomes of Mr. M's future dental treatment. If nothing is done, however, the patient is at risk of causing more harm to himself. After consulting with many faculty members on the matter, I was told to wait until the issues of consent and patient autonomy are resolved to work on the partial. As such, I recommended that Mr. M not use his partial nor make any changes to his partial for the time being and subsequently return with a relative, at which time we could make a decision on how to proceed.

## Ultimate Resolution

Dentists cannot control patients in a manner to suit their definitions of what is ethical. Mr. M was not referred for evaluation of his capacity to care for himself and no action was taken with respect to the previously treating dentists. Mr. M did not return for further dental care. ■





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