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and leadership in dentistry**

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- A. To urge the extension and improvement of measures for the control and prevention of oral disorders;
- B. To encourage qualified persons to consider a career in dentistry so that dental health services will be available to all, and to urge broad preparation for such a career at all educational levels;
- C. To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;
- D. To encourage, stimulate, and promote research;
- E. To improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;
- F. To encourage the free exchange of ideas and experiences in the interest of better service to the patient;
- G. To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public;
- H. To make visible to professional persons the extent of their responsibilities to the community as well as to the field of health service and to urge the acceptance of them;
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Cover: Looking into what the data means.

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From the Editor

The Cassandra Quadrant

Can you imagine a fate worse than seeing clearly the great and the good as well as the dangers that will befall your friends, but finding that they will not listen to you?

In Sunday school I learned that the serpent, for his part in the first big con job, would forever strike man's heel and man would bruise his head. Why then is the serpent so prominent on the caduceus, the traditional emblem of the bringer of health?

To the Greeks, the snake represented insight and prophesy. Early physicians were not so much healers as diagnosticians. There is a famous passage in the Hippocratic writings that equates the doctor's power with the confidence he creates in patients by foretelling the course of disease. "When you are successful in making a prediction you will be admired by the patient you are attending, but when you go wrong you will not only be subject to hatred, but perhaps even be thought mad." (Hippocrates Corpus, Volume VIII, Prorrhetic II.)

Until a hundred years ago, diagnosis and palliative care were more characteristic of the professions than were cures. Repair still dominates dentistry.

Prophesy was traditionally a gift of the serpent, who left a little something in the ear. Cassandra, daughter of King Prium of Troy had the gift from a snake, but it turned into a curse. She spurned the advances of Apollo, and he spat into her mouth, thus ensuring that no one would believe her. Can you imagine a fate worse than seeing clearly the great and the good

as well as the dangers that will befall your friends, but finding they will not listen to you?

At the spring board meeting in Williamsburg, the regents and officers of the College engaged in a strategic planning exercise. Part of what we did was to consider a square labeled on the horizontal axis for "respect" and on the vertical axis for "influence." In the lower left we placed dental organizations that stood for nothing and were largely overlooked anyway. In the upper left were those well-known for saying a lot of nothing in particular. The lower right was for organizations that had a strong message but failed to get it out. There were no organizations in dentistry in the upper right quadrant—vigorously saying what needs to be said.

The college was in the Cassandra quadrant. Our message is worthy, but we could speak up a little.

There may be some very good reasons why the American College of Dentists clearly sees what is needed to make the profession strong and respected but is no longer making the impact it did in their first years of its existence. We select individuals who have a career of leadership and ethics behind them. Their wisdom is more than impressive, but they are no longer in positions to speak. The average age of inductees is 55 and increasing. The age of maximal impact on leadership in the profession is between 45 and 50 years. Our message is respected, but are we being listened to?

James Rest was an ethics researcher who identified four components to a moral life: awareness, reflection, character, and courage. First, one needs to recognize when an ethical challenge exists. Next, one has to engage in reflection to identify the best path forward. The third component is moral character. One has to be the kind of person who values doing the right thing, consistently and as a matter of habit. Fellows of the American College of Dentists overwhelmingly score high on the first three criteria.

What would it look like if we had the courage to speak out, to force the profession to listen to how things could be made better? Does any Section of the College have a communications officer? Is there anyone who could be recruited and given a budget for that position? Do we wait for folks to do something great so we can give them an award, or do we work on projects that will make others great?

It is hard work to speak up, and it requires courage. What if we start a conversation with corporate dentistry and it turns out that they have some important points we have overlooked? What would happen if we took a colleague, generally known in the community for questionable standards, to breakfast and asked to better understand why he or she has chosen to practice that way? If someone said there was an empty chair at the table where insurance companies are in

The college was in the Cassandra quadrant. Our message is worthy, but we could speak up a little.

Do we wait for folks to do something great so we can give them an award, or do we work on projects that will make others great?

negotiations with employers over dental benefits, would we sit down? Have the conversations we have had about what the college stands for been mostly with fellows or with others?

Here are a few suggestions for those who agree in principle that the message of the College is strong and there is no need to do anything further about it: "Isn't it just obvious what is right, and shouldn't everyone want to act that way?" "Shouldn't everyone want to be like me?" "It is hopeless—moral character is set before entering dental school and there are some strange new values out there now." "Others need to have at least an acceptance of my values before it is worth having a conversation." "I respect others and do not want to push my views." "I don't know what to say." "What if I offend someone, or

they sue me?" "My own values are set and I run a risk in talking to others that they could say something to upset me." "It is not worth the time and money." "Somebody else will take care of it. After all, that is why I join professional organizations with high ideals." Paraphrasing William Jennings Bryan, "It is a poor mind that cannot think up several really good reasons for not doing something one finds inconvenient."

Perhaps the college will forever suffer the fate of Cassandra, of knowing the right thing for improving the profession but being cursed by having others not believing us. I, for one, have no doubt that we are worth listening to. What's that you said... could you speak a little louder please?



Disruptive Innovation and the Oral Health System

Paul Glassman DDS, MA, MBA, FACD

Abstract

Disruptive innovation is a process whereby companies or industries that have succeeded in the past by producing ever more sophisticated and expensive products and services end up losing their customer base because eventually others enter to serve a market more in line with true consumer needs. The U.S. oral health system has followed this path and is now perfectly positioned for disruptive innovation. Among the innovations that are already disrupting the industry and will increasingly do so are consolidation of dental practices, bringing care to where people are through telehealth-health connected teams and Virtual Dental Homes, and payment systems that provide incentives for lowering costs and improving the health of the population.

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The U.S. oral health system is now perfectly positioned for disruptive innovation. The health of the industry and the success of its members will depend on the degree to which this reality is appreciated and the ability to adapt to a changing environment.

The concept of disruptive innovation explains why even the most outstanding companies and industries can do everything right yet still lose market leadership. This leads to the conclusion that successful companies and industries, even those with established and successful products, will get pushed aside unless leaders and managers know how and when to abandon traditional business practices and adopt new ones. This concept, now, more than in any previous era, applies to the oral health system.

This article will review the concept of disruptive innovation, present evidence that oral health is positioned for disruptive innovation, and suggest some emerging disruptive innovations that will have major impacts on the oral health system in the coming decades.

Disruptive Innovation

The concept goes back to the Austrian economist Joseph Schumpeter (1942) who proved that market efficiencies, over time, drive all profit out as someone is always willing to take a lower profit. That is the definition of a pure market. The only forces that slow or prevent this effect are favorable government regulation and monopoly status, such as dentistry enjoys today,

or disruptive market technology. Harvard Business School Professor Clayton Christensen is the current architect of and the world's foremost authority on disruptive innovation. He has published eight books on this subject and over 50 related articles. He consults regularly with major industry and government agencies. In his first book on this subject, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, he described the basics of disruptive innovation (Christensen, 1997). These concepts, and their relationship to trends now evident in the delivery of oral health services are necessary to understand for leaders and participants in the oral health and related markets.

Christensen describes disruptive innovation as a process by which a product or service takes root initially in simple applications, at the bottom of a market; that first provide simple, accessible, and basic services; and then relentlessly moves up market, eventually displacing established competitors. He explains that as companies or industries tend to innovate faster than their customers' needs evolve, most organizations or industries eventually end up producing products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their market. The same thing happens to governments. Companies or industries pursue these innovations

at the higher tiers of their markets because this is what has historically helped them succeed. By charging the highest prices to their most demanding and sophisticated customers at the top of the market, companies and industries have achieved the greatest historical profitability. This is especially the case in professional service firms where the primary productive resource, the owner's professional time, has finite limits. David Maister (1993) has shown that increasing profits in such situations must come from either delegation to paraprofessionals or recruitment of higher paying and more reliable clients.

However, companies or industries that produce these increasingly sophisticated and expensive products and services at the higher tiers of the market unwittingly open the door to disruptive innovations at the bottom of the market. An innovation that is disruptive allows a whole new population of consumers at the bottom of a market access to a product or service that was historically only accessible to consumers with a lot of money or a lot of skill.

Trends in the Healthcare and Oral Healthcare Systems

Although there are significant differences between the U.S. healthcare system as a whole and the oral health industry, many of the trends and forces impacting the U.S. healthcare system are similar to and relate to trends impacting the U.S. oral healthcare industry.

Among the major trends causing concern and driving change in the U.S. healthcare system and in the U.S. oral healthcare system are:

- The skyrocketing cost of health care unrelated to improvement in health outcomes
- Increasing understanding of the harm and unwarranted variability our fragmented healthcare system produces
- Evidence of the profound health disparities that still exist in the population despite scientific advances in care
- Increasing awareness of these problems in the age of consumer empowerment

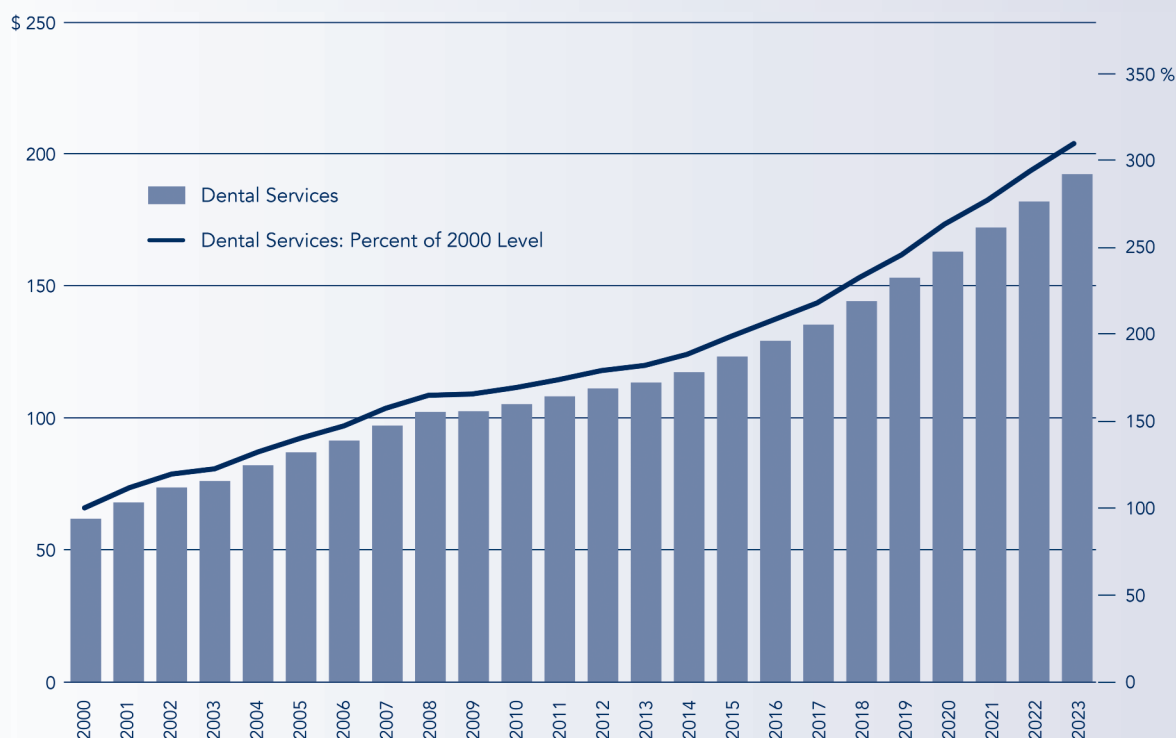
Health Care Expenses and Price

The United States now spends close to 20% of its Gross Domestic Product (GDP) on health care (Squires & Anderson, 2015). This is in contrast to other developed countries in the world that are spending 10% or less of their GDP on health care. This level of spending puts the United States at a competitive disadvantage in the current era of global economic competition.

In addition to significantly outspending other developed countries, the United States achieves significantly worse health outcomes than these

As companies or industries tend to innovate faster than their customers' needs evolve, most organizations or industries eventually end up producing products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their market.

FIGURE 1. National Oral Health Expenses.
U.S. National Dental Expenditures 2000–2023 (\$billions).



Source: CMS National Health Expenditure NHE Historical Data and Projections.

other countries. The United States also spends significantly more money on very sophisticated and expensive technologies and interventions that benefit relatively few people. Also, the United States spends significantly less money as a percent of GDP than other developed countries on social services that are now widely recognized as being able to address the social determinants of health and drive down healthcare spending. The Institute of Medicine states that “taking action on the social determinants of health as a core function of health professionals’ work holds promise for improving individual and population health outcomes, leading in turn to significant financial benefits” (National Academies of Sciences, Engineering, and Medicine, 2016).

The amount of money that the United States spends on oral health care is also increasing rapidly. As illustrated in Figure 1, the U.S. Centers for Medicare and Medicaid Services (CMS) is projecting a 300% increase in total national spending on oral health between 2000 and 2023. Also, as illustrated in Figure 2, not only is the amount of money being spent on oral healthcare services increasing rapidly, but it is now among the top three health conditions in terms of healthcare spending in the United States.

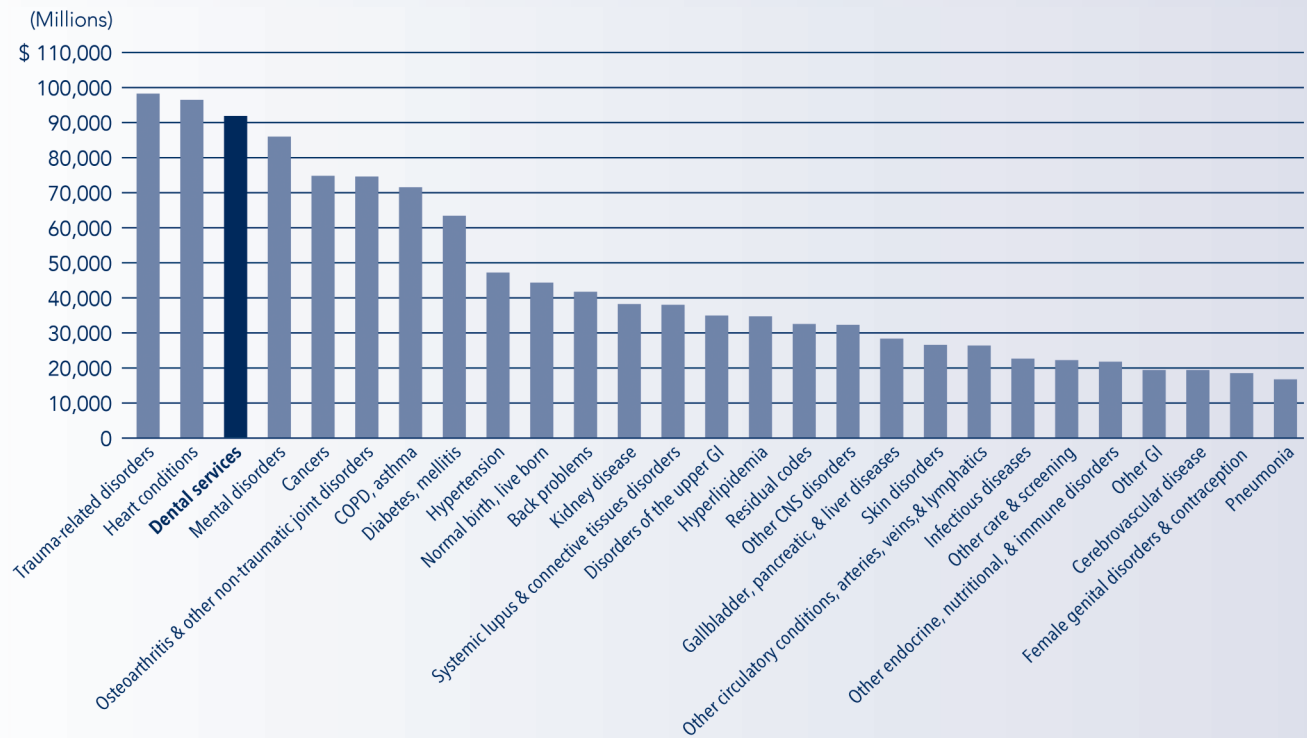
Oral health care is very big business!

Unfortunately, the significant increases in oral healthcare spending do not mean that more people are receiving dental services and have good oral health. The primary reason is that the price people need to pay to

obtain health services has been increasing faster than the rate of inflation for decades! Figure 3 compares the Consumer Price Index (CPI), the generally accepted rate of inflation, with the Consumer Price Index for Dental Services (CPI-DS), a measure of the average price the average person pays for the average amount of dental care. The price of dental services has increased almost twice the rate of inflation between 1990 and 2014.

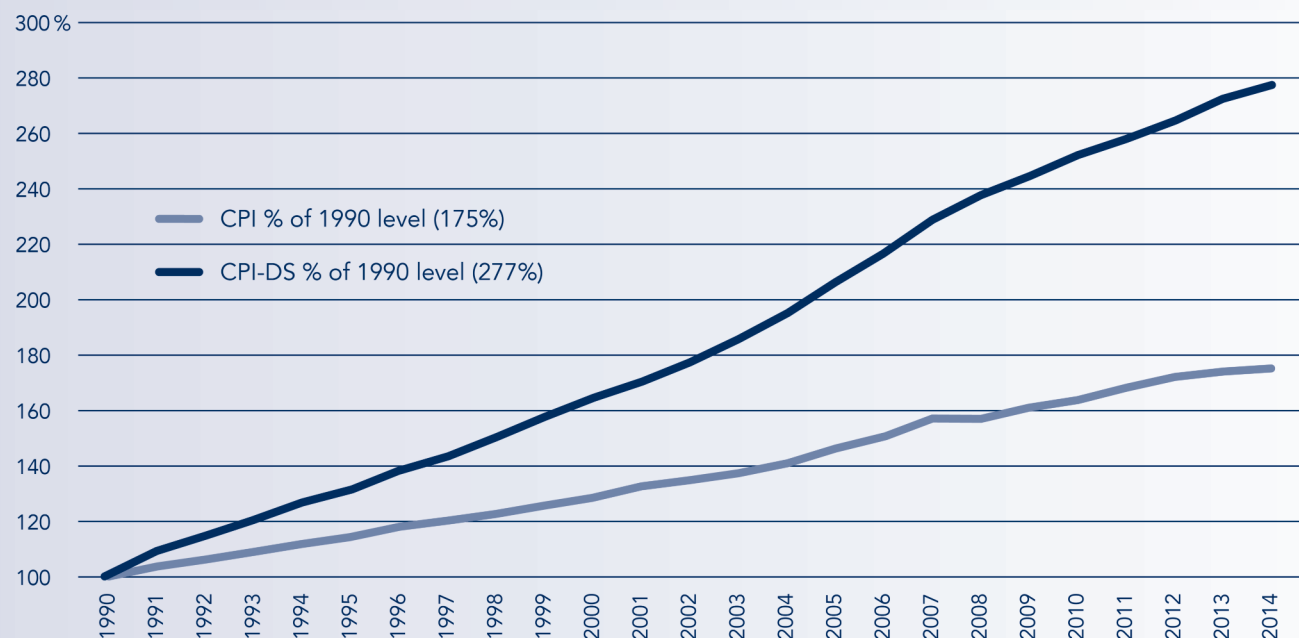
One problem with the rapid rise in the price of dental care is that dental care is more price-sensitive than other aspects of health care. That is, people are more likely to put off or not purchase dental services because of price, than they are to put off other healthcare services which are more

FIGURE 2. U.S. Health Spending by Condition.
Medical Expenditure Panel Survey: Top 25, 2013.



Source: Medical Expenditures Panel Survey, Expenditures by Medical Condition 2013.

FIGURE 3. Price of Oral Health Services versus Inflation.
Consumer Price Index (CPI) and CPI for Dental Services (% 1990 dollars).



Source: Bureau of Labor Statistics: Consumer Price Index.

likely to be paid for by third-party payers. Dental care services are second in cost only to prescription drugs in healthcare services that are paid for out of pocket. As a result, dental care is the number one healthcare service that people believe they need but decide not to obtain because cost is a barrier (Wall, Nasseh, & Vujicic, 2013).

Because of rising prices for dental services and people putting off dental care primarily due to cost, the major purchasers of dental services are now the wealthiest members of society. Dental services are primarily purchased by those with the highest family incomes in the United States. In fact, the majority (52%) of dental services purchased in the United States are purchased by those in the highest family income bracket.

Impact on the Oral Health System

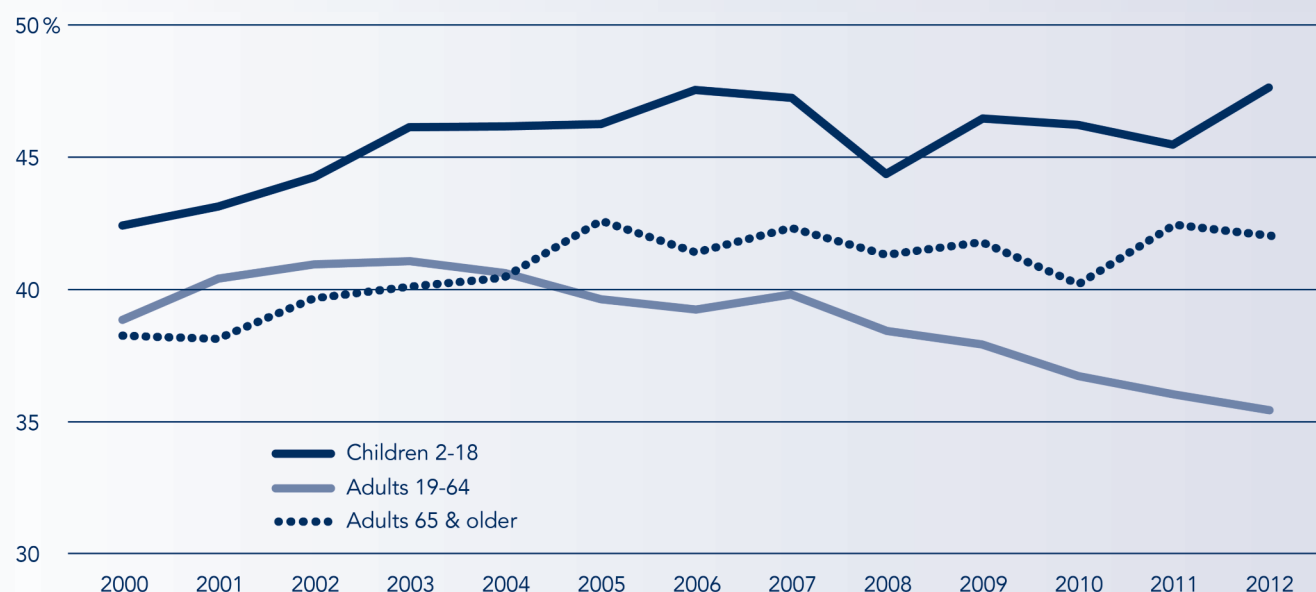
As a result of the factors described above and others, use of dental care services in United States is declining. Evidence of this decline can be summarized as follows:

- Per capita visits to dental offices began to decline in 2013 and have declined more than 10% for over a decade (Vujicic et al, 2012).
- There has been a dramatic shift in the types of procedures performed in dental offices (Munson & Vujicic, 2014). In 1959, the most common procedure performed in dental offices was amalgam restorations, which accounted for 41% of dentist's procedure mix. At that time, dental examinations and

prophylaxis procedures accounted for 42% of dentists' procedure mix. In 2005, restorative dentistry procedures accounted for only 14% of dentists' procedure mix while diagnostic and preventive services accounted for 79% of dentists' procedure mix. This dramatic shift from dentists primarily performing restorations to dentist primarily performing diagnostic and preventive services can, at least in part, be attributed to the fact that people are putting off dental care and the dental industry is now primarily serving the wealthiest members of society, who are also the healthiest members and do not need a lot of dental treatment.

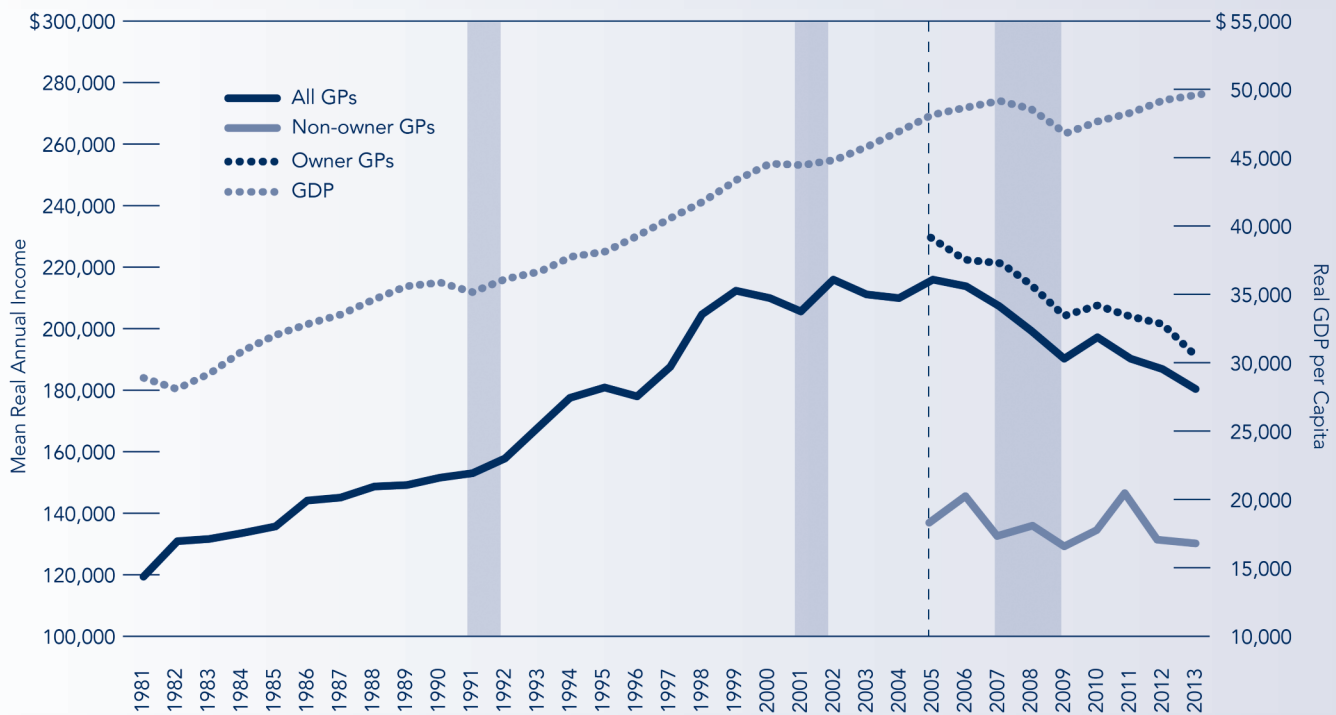
- As illustrated in Figure 4, less than half the population has an annual

FIGURE 4. Percent of the Population with an Annual Dental Visit, 2000–2012.



Source: Medical Expenditure Panel Survey, AHRQ.

Notes: For children ages 2–18, changes were statistically significant at the 1% level (2000–2012) and at the 10% level (2011–2012). Among adults ages 19–64, changes were statistically significant at the 1% level (2003–2011). For adults 65 and older, changes were statistically significant at the 5% level (2000–2012). Changes from 2011 to 2012 among adults 19–64 and 65 and older were not statistically significant.

FIGURE 5. General Practitioner Dentist Earnings, 1989–2013.

Source: ADA Health Policy Institute; Bureau of Economic Analysis; Bureau of Labor Statistics.

Note: Net income data are based on the ADA Health Policy Annual Survey of Dental Practice with years 2000–2013 weighted to adjust for nonresponse bias. Shaded areas denote recession years according to NBER. GDP is deflated using the GDP deflator. Net income is deflated using the all-item CPI. All values are in constant 2013 dollars.

dental visit. Since 2003 the percent of the population with an annual dental visit has remained around 46% for children and 42% for seniors. In contrast, the percent of working age adults with an annual dental visit has dropped from 41% in 2003 to 35% in 2012. However, even these data do not fully illustrate the extent of the problem. First, an annual dental visit does not mean that people received all the dental care they need or are free from dental disease. Second, these statistics combine data from people with all levels of family income. When family income is considered, only about one-third of children in families with the lowest half of

family incomes have even an annual dental visit, only about 25% of seniors in the lowest half of family incomes receive an annual dental visit, and only about 20% of working age adults in families in the lowest half of family incomes have an annual dental visit. Third, the segment of the population that spends the most money per visit on dental care is the highest income senior population. High income seniors have been found to spend \$841 per visit compared with lower income working age adults who spend only \$559 per visit (Wall et al, 2013). Unfortunately, these Baby Boomers who are now propping up the dental office will be followed by the current generation of working

age adults, who seek care in dental offices far less than do the Baby Boomers and who spend far less per visit when they do seek care.

- As illustrated in Figure 5, all of the factors described above have led to a decline in dentists' incomes. Dentists' incomes rose steadily, and at a rapid rate, for decades until 1989 at which time they leveled off until 2005 (Chambers, 2014). 2005 marked the beginning of a decade-long stagnation in dentist's incomes. Dental practices are now serving a declining portion of the U.S. population, primarily the wealthiest and healthiest. The American Dental Association has

characterized the trends described here as “a new normal” (ADA, 2013)². This phrase refers to the conclusion that these trends are not temporary and they will be a part of and significant force shaping the future of the oral health industry for the foreseeable future.

Disruptive Innovation and the Oral Health System

The trends described here clearly indicate that the oral health industry is one well positioned for disruptive innovation. Matching Christensen’s characterization of companies and industries:

- The oral health system has been producing products or services that are actually too sophisticated, too expensive, and too complicated for the majority of people in the U.S. population to take advantage of.
- The oral health system has pursued these sophisticated and expensive products or services, and raised prices at almost twice the rate of inflation, because for decades doing so was a successful strategy and resulted in increasing profitability and increasing dentists’ incomes.
- These strategies stopped being successful around 2005. Since then there has been declining use, people indicating that they are putting off dental care because of cost, dental services being purchased by primarily the wealthiest and healthiest people in the country, and a steady downtrend in dentist’s incomes.

All of these trends constitute a perfect fit for Christensen’s character-

ization of an industry that is positioned for disruptive innovation. The question concerning those who are aware of these trends is “What will disruptive innovation in the oral health system look like?”

What Will Disruptive Innovation Look Like in the Oral Health System?

While the full range of disruptive innovations that will change the way dental services are provided in the United States will only be known in retrospect, several trends are already present and having increasing impact.

Consolidation

Ownership of dental practices is shifting from solo practices to group practices, and very large dental establishments are the fastest growing segment of the industry.³ According to the U.S. Census Bureau, in 2000 there were 50,035 dental offices with four or fewer employees. In 2013 there were close to the same number at 50,784, essentially no growth in solo or small practices. In contrast, in 2000 there were 1,202 dental establishments with over 500 employees. By 2013 there were 4,059 dental establishments with over 500 employees, close to a 250% increase. As can be seen in Figure 6, the larger the size of the dental establishment, the faster the growth.

This trend is being driven by economies of scale where larger firms can better negotiate discounts on equipment and supplies; can use technology to centralize and increase efficiency in scheduling, billing, and other business functions; and can attract dental graduates burdened with high debt and eager to have a steady paycheck while reducing worry about running the dental business.

It should be realized, however, that there are limits to the ability of larger

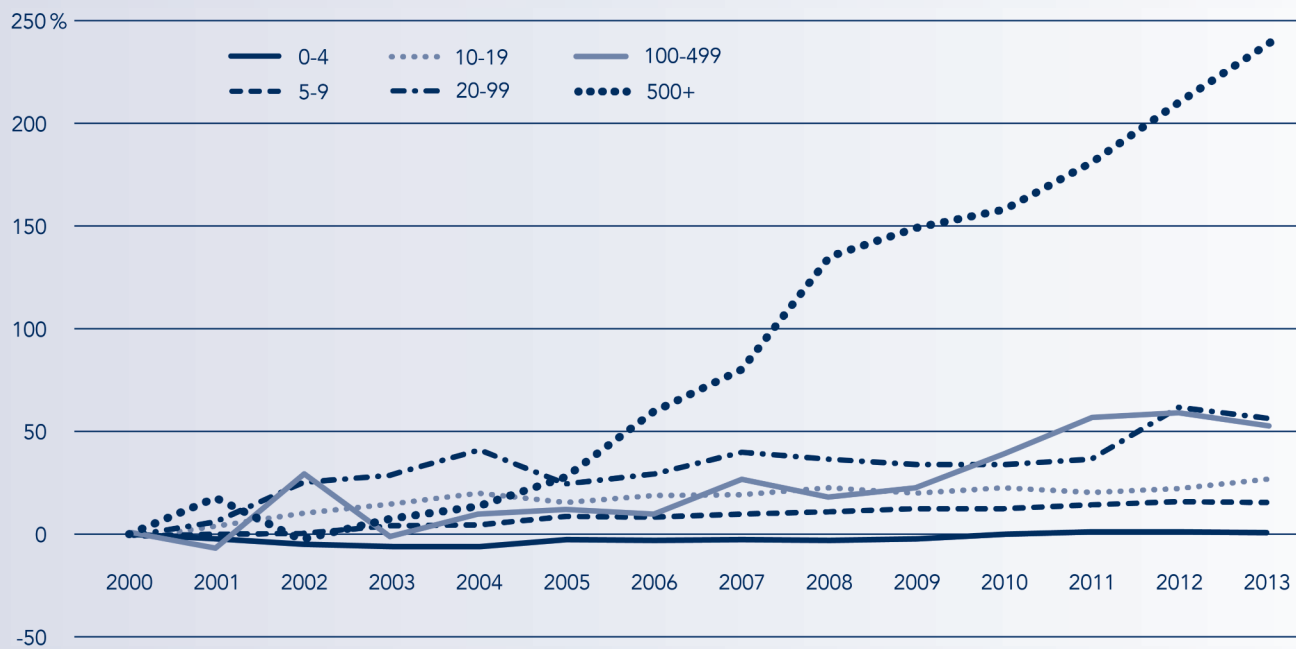
firms, even with economies of scale and other advantages, to significantly disrupt the dental market because they do not address the major problem facing the system: most people are not seeking care in dental offices.

Bring Care to the People

In 2011 the Institute of Medicine (IOM) published a national study of the U.S. oral healthcare system called *Improving Access to Oral Health Care for Vulnerable and Underserved Populations*. That report included a “Vision for Oral Health Care in the United States,” which is shown in Figure 7. That vision and subsequent recommendations in the report point to a system that focuses on delivering prevention and early intervention services in places where people live and work or receive educational, social, and general health services.

One example of such a system, developed in California by the Pacific Center for Special Care at the University of the Pacific School of Dentistry (Pacific), and now being established in a number of other states is called the Virtual Dental Home (VDH) system (Glassman et al, 2012a; 2012b; 2012c; Namakian et al, 2012). The term Virtual Dental Home refers to a system that delivers all of the services commonly regarded as being part of a dental home but does so using a geographically distributed, telehealth-connected team, rather than being confined to a single physical dental office.

The VDH is a community-based oral health delivery system in which people receive preventive and early intervention therapeutic services in community settings such as pre-schools, elementary schools, residential facilities, and nursing

FIGURE 6. Growth in Dental Establishments by Number of Employees, 2000–2013.

Source: www.census.gov/programs-surveys/susb.html

homes. It uses telehealth technology to link allied dental personnel in the community with dentists in dental offices and clinics. Pacific has demonstrated that allied dental personnel, including dental hygienists and dental assistants, working in telehealth-connected teams, can keep most people healthy in community settings by providing education, triage, case management, preventive procedures, and Interim Therapeutic Restorations (ITR). Where more complex dental treatment is needed, the VDH system gets people to dentists in the area for those services, although ongoing diagnostic and prevention services continue in the community. In 2014 and 2015, legislation and subsequent regulations were adopted in California to require

FIGURE 7. IOM Vision for Oral Health Care in the United States.

Everyone has access to quality oral health care across the life cycle.

To be successful with underserved and vulnerable populations, an evidence-based oral health system will:

1. Eliminate barriers that contribute to oral health disparities.
2. Prioritize disease prevention and health promotion.
3. Provide oral health services in a variety of settings.
4. Rely on a diverse and expanded array of providers competent, compensated, and authorized to provide evidence-based care.
5. Include collaborative and multidisciplinary teams working across the health care system.
6. Foster continuous improvement and innovation.

the California Medicaid dental system to pay for telehealth enabled services and now allow this system to be broadly adopted with appropriate training and certification.

Pacific has published reports of the six-year demonstration of the VDH system.⁴

The main findings of this demonstration are:

- The VDH creates a “continuous presence” system of care where allied dental personnel are present in community sites throughout the year, integrating oral health awareness considerations and activities into the structure and processes of community educational, social, and general health systems. This system of continuous presence is critical to influencing children, parents, adults, and caregivers to adopt and support health promoting prevention procedures and diets which are critical to improving oral health.
- The VDH allows the majority of people seen in community sites to be kept healthy with only allied dental personnel being physically present with them. It also allows these individuals to be verified as healthy by dentists, removing the need for them to travel to a dental office to be examined.
- The VDH connects dentists in dental practices and clinics to activities in community sites creating “community-clinical” linkages and a full-spectrum system of care.
- The VDH creates a new vision of a dental practice with the dental office and clinic becoming a part of a larger “practice without walls” that includes the community locations.

In 2015 the American Dental Association House of Delegates adopted a resolution endorsing teledentistry as a tool that can be used in dental practice which will support adoption of systems such as the VDH that use this technology⁵

In 2015 the American Dental Association House of Delegates adopted a resolution endorsing teledentistry as a tool that can be used in dental practice which will support adoption of systems such as the VDH that use this technology.

There is now widespread interest in this disruptive innovation as it promotes expansion of dental practices and linkages between dentists in dental offices and these community-based allied dental personnel. Most importantly, it has the potential to bring much-needed prevention and early intervention services to the majority of individuals who might otherwise receive no care until they have advanced disease.

Move Payment from Volume to Value

The “Triple Aim” has become our national goal for reform of the U.S. healthcare system (Berwick et al, 2008). This phrase, coined by Dr. Don Berwick, former director of CMS describes three goals:

- Improving the experience of care for people
- Improving the health of populations
- Reducing per capita costs of health care

One of the strategies for achieving the Triple Aim, which is being promoted across the healthcare spectrum, is described in a phrase coined by the Urban Institute: *Moving Payment from Volume to Value*.⁶ This phrase refers to adopting strategies to move away from payment mechanisms that reward providers for doing high volumes of procedures or visits or enrolling large numbers of patients. Instead systems are being developed for rewarding providers for improving the health of the population they are serving and for achieving the Triple Aim.

A 2011 report, *Oral Health Quality Improvement in the Era of Accountability*, described the significant changes taking place in the U.S. healthcare industry and the implications for the U.S. oral health system.⁷ That report described the factors, many of which are listed earlier in this article, that are driving policymakers and healthcare systems to pursue the Triple Aim in achieving oral health. Such systems have been developed and tested in general healthcare systems for several decades. They are now demonstrating improved health and saving billions of dollars in previously wasted healthcare costs.

In the last decade significant sectors of the oral health industry are beginning to test and plan for systems that reward plans, providers, and systems for improving the oral health of the population. As these incentive and payment patterns are refined and adopted, there will be a major disruptive innovation in the oral

health system. Successful oral health providers in this era of accountability will be those that combine the disruptive innovations described above: develop consolidated and efficient technology driven delivery systems, bring care to the majority of people who do not receive it on a regular basis now, lower the cost per capita for providing dental services, and improve the oral health of the nation's population.

Conclusion

Disruptive innovation is a process whereby companies or systems that have succeeded in the past by producing ever more sophisticated and expensive products and services end up losing their customer base because eventually they become dependent on products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their markets. The U.S. oral health system has followed this path and is now well positioned for disruptive innovation. Among the innovations that are already disrupting the system and will increasingly do so, are consolidation of dental practices, bringing care to where people are through telehealth-health connected teams and Virtual Dental Homes, and payment systems that provide incentives for lowering costs and improving the health of the population. ■

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The Oregon Dental Market

A Case Study

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Abstract

This case study examines changes taking place in the Oregon dental care system. Data were obtained from interviews with senior executives from several delivery organizations. Conducted by the senior author (HB), the summarized interviews were reviewed by informants. Oregon Medicaid enrollees now receive medical/dental care in capitated managed care organizations. Several dental group practices that provide care to privately and publicly insured patients are growing rapidly. The largest local dental insurer has diversified into other health products, including management services for affiliated dental practices. The Oregon dental market is undergoing a major reorganization: (a) large dental group practices are expanding and solo practices are declining; (b) all Medicaid patients receive their care in state-regulated Coordinated Care Organizations and their contracted Dental Care Organizations; and (c) more dental graduates are seeking employment in group practices. Longer term, the dental group practice companies are expected to undergo some consolidation. Two key features of the Oregon dental market are the growth of large dental group practices and the reorganization of the dental Medicaid system.

The U.S. dental care delivery system is undergoing major changes. This is evident in a series of papers from the American Dental Association.¹ For example, there has been a decline in per capita utilization and expenditures for dental services. This trend started in 2002, accelerated in 2008, and continues in inflation-adjusted dollars. The incomes of general and specialist dentists also declined and did not rebound with the economic recovery of 2009. Other important changes include a large increase in dental graduates, a decline in employer-based private dental insurance, greater enrollment of children and in some states, adults, in the Medicaid program associated with the Affordable Care Act (ACA). Finally, the percentage of dentists working in group practices has increased and is approaching the percentage in solo practices (Guy et al, 2012).

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The delivery of dental and medical services is considered a local business (Kronick & Gilmer, 2012; Miller et al, 2011; Vujicic & Nasseh, 2015). That is, the way health care is provided varies across local markets because of demographic, political, cultural, and other differences among populations and healthcare organizations. Consequently, national trend data may not reflect conditions in local markets and certainly do not offer complete understanding of the dynamic restructuring of the dental delivery system that is now taking place in local markets (e.g., state, regional, or large urban areas). Indeed, with a few exceptions, the private and public national research organizations that monitor national dental health care trends do not collect local market data.

The purpose of this study is to provide a detailed description of changes taking place in the delivery of dental care in the state of Oregon. This state was selected for two reasons: (a) the dramatic change in the way the state manages an expanded Medicaid program and (b) the large and growing number of group dental practices operating in the state. With limited quantitative data available on the Oregon dental care system, this study is based primarily on qualitative data collected from interviews with the larger dental delivery organizations. It follows the general methodological approach used in a series of published studies of local medical markets

(Kemper et al, 1996; Ginsburg et al, 2000). Specifically, general background information is presented on the state of Oregon, the dental care system, and the Medicaid program. Then, detailed information is provided on the major private and public dental delivery organizations and the companies that support them, namely payers, state regulators, benefit consultants, and suppliers. These data are then synthesized to present an analysis of the changes taking place in the Oregon dental market.

Methods

This study focused on organizations that are directly involved in providing the population personal dental services. It also included other organizations that have a vital role in the dental care system (e.g., the state dental association and payers). Hospital dental services and dental clinics that provide care to institutionalized populations (e.g., prison inmates, armed services) were not considered. Collectively, these other delivery organizations employ less than two percent of dentists.

Data were obtained from two primary sources: (a) a review of organizational websites, with some sites providing information on organizational history and current operations, and (b) interviews with one or more senior executives from each organization. The data on the

websites were cross-checked, based on interviews with company executives and their competitors. The companies were selected on the basis of recommendations by the co-authors living in Oregon who were familiar with the participating organizations. They were also selected based on the recommendations of the people interviewed, since they were knowledgeable about their main competitors. All the organizations contacted agreed to participate in the project.

Once the organizations were identified, they were sent letters explaining the purpose of the study and asked to participate. The companies identified the person or personas to contact for the interviews. Usually, this was one or more senior executive who had a broad knowledge of the company and the Oregon dental market.

For each organization, a list of questions was prepared and sent to informants before the interviews. The question categories were: (a) informant's current position and employment history; (b) history of the organization; (c) a general overview of the Oregon dental market; (d) the organization's dental delivery model and current operations; and

There has been a marked decline in the demand for new solo practices and an increase in demand from group practice companies. Presumably, this is because new graduates are unable or unwilling to finance starting their own solo practices.

(d) opinions regarding the future of the Oregon dental market. Some questions were unique to a specific organization because of their special role and activities (e.g., Primary Care Association).

All interviews were conducted by the senior author (HB). After each interview, the discussion was summarized and sent to informants for comment and editing. A draft of this paper was also sent to them for their review and comment.

Table 1 lists the organizations and executives interviewed by type of organization.

Background data on the state of Oregon and the dental care delivery system came from general sources available on the Internet.

This study was reviewed by the Institutional Review Board (IRB) of the University of Connecticut Health Center. The board ruled that the study did not require IRB approval.

Results

Background Information

State of Oregon: Located in the Northwest, this largely rural state has 3.9 million people who are heavily concentrated in the metropolitan areas of three cities, Portland, Salem, and Eugene (78%).² The population is predominantly white (87%) and has voted for Democratic presidents since 1988. As of December 2014, the unemployment rate was 7.1 percent,

and the average per capita income was \$26,809. The largest employers are Providence Health & Services, Intel, Nike, Adidas, and the federal government.

Dental Care System: In 2014 Oregon had 2,562 licensed dentists working in the state; 76% were general practitioners in 2013 (83% in 2010).³ From 2012 to 2014 the number of clinically active state dentists increased 9.7%, and the percentage working 31 or more hours per week increased to 66%. Since 2010, the number of dentists working in group practices increased 40%, and the number in solo practices declined 21%. Still, 52% of privately practicing dentists were in solo practice. Total

TABLE 1. Participating Organizations, Informants and Their Positions by Type of Organization.

<i>Organization Type</i>	<i>Organization</i>	<i>Informants</i>	<i>Position</i>
Care Providers	Oregon Dental Association	Conor McNulty Christina Swartz	Executive Director Managing Director
	Kaiser Permanente	Kenneth Wright	Vice President, Dental Services
	Willamette Dental Group	Russell House	Vice President, General Counsel
	Advantage Dental	Michael Shirtcliff	Chief Executive Officer
	Oregon Primary Care Association	Sarah Dryfoos Jeffrey Sulitzer	Dental Project Manager Chief Dental Officer
	Capitol Dental	Hart Laws	Chief Executive Officer
Payer/Provider	MODA	William Ten Pas	Senior Vice President MODA, President Oregon Delta Dental Service
Regulator	Health Share of Oregon	Janet Meyer	Chief Executive Officer
Supplier	Henry Schein Dental	Michael Corcoran	Equipment Sales Specialist
Employee Benefits Consultant	Mercer	Kari Johnson	Principal
Dental Educator	School of Dentistry, Oregon Health & Science University	Philip Marucha	Dean

dental expenditures in 2009 were \$1.5 billion.⁴ Reflecting population concentration in metropolitan areas, 33 of the state's 36 counties are designated Dental Health Professional Shortage Areas.

Medicaid System: The Oregon Medicaid program (known as the Oregon Health Plan) has a long history of fostering alternative payment and care models. In the early 1990s the state began experimenting with capitated delivery systems for medical, dental, and behavioral health care. In 2012, to improve access to high quality care and to control expenditures, the state reorganized the Medicaid delivery system.⁵

The goals of the new system were better population health, better care for individuals, lower costs (an annual 2% reduction in Medicaid expenditure growth), and better quality of care. The state set an annual global Medicaid budget and passed the financial risk on to provider organizations. The state also created 16 locally governed Coordinated Care Organizations (CCOs) to administer the care provided to Medicaid enrollees. Each CCO covered a specific region and contracted with local health care organizations (medical, dental, behavioral health) to provide care to Medicaid members.

There are now nine approved Dental Care Organizations (DCOs) that contract with CCOs. Four DCOs are staff model dental group practices (Access Dental Plan, Managed Dental Care of Oregon, Kaiser Permanente, and Willamette Dental Group), two are group practice companies that use both company owned and staffed group practices and networks of contracted community practitioners

Most employers appear to prefer separate medical and dental insurance plans.

(Advantage Dental Services and Capitol Dental Care), one almost exclusively using a network of Federally Qualified Health Centers, FQHCs, (Care Oregon), and two are companies with networks of contracted dentists (Oregon Dental Service and Family Dental Care). Private dental practices have to contract with a DCO to receive payment for treating Medicaid patients.

All Medicaid members are enrolled in a CCO according to their residence and are assigned by the CCO to a specific DCO based on an algorithm that takes into account DCO capacity for additional patients. Enrollees can switch DCOs, but relatively few do (900 out of 250,000 in one CCO, Health Share of Oregon).

Working under one global budget received from the state for all health services, the CCOs provide DCOs a negotiated capitation payment (per member per month) for each Medicaid member. Thus, the DCOs are at financial risk to provide the target population access to dental care as specified in their performance metrics. There is no direct relationship between the state and the DCOs or their participating dentists.

The state has established regulations that guide CCO and DCO performance, including a minimum loss ratio of 80% and explicit performance guidelines. The CCOs audit the performance of DCOs with respect to these regulations and publish the results. In this way, the effectiveness of each DCO is publicly compared to

all other DCOs. As an additional performance incentive, the state makes a bonus available to CCOs which they can share with DCOs.

The Oregon Health Authority, a state agency, has established a system of 17 metrics to assess the performance of the organizations providing medical, dental, and behavioral health care to the Medicaid population. The one dental metric is the proportion of children ages six through nine and 11 through 14 who received dental sealants in a permanent molar in the measurement year (2015).

All Medicaid encounter data for each DCO is periodically sent to the State Medical Office which provides analytic services to the CCOs and other users. Also, CCO member services units receive consumer complaints and questions which they pass on to the DCOs for resolution. In this way, CCOs have detailed performance data on their contracted DCOs.

In 2014 Medicaid enrollment increased substantially (more than 300,000 members). This resulted from ACA incentives to expand Medicaid eligibility to 138% of the Federal Poverty Level. Over a million people are now eligible for Medicaid dental services.

Dental Delivery and Support Organizations

Oregon Dental Association (ODA): The ODA represents the interests of practicing dentists. While most members are in private solo practice, the ODA is making a determined effort to increase the number of public sector and group practice dentists in

Oregon experienced some employee layoffs during the 2008-2009 economic recession, and a similar decline in private dental insurance enrollment. However, employers did not cancel their dental plans but did increase the amount their employees contributed to premiums.

the organization. The number of Oregon dentists has increased from 2008 (2,374) to 2013 (2,583); the percentage joining the ODA has declined from 72% to 64% of practicing dentists during this period.

Some ODA members are anxious about recent developments in dentistry: (a) slow growth of incomes, (b) increased competition from group practices, (c) problems selling practices at retirement, and (d) insurer pressure on fees. Increased economic pressures have not caused significant numbers of dentists to form group practices or independent practice associations (IPAs).

Kaiser Permanente (KP): KP operates as a Health Maintenance Organization (HMO) in multiple states through an exclusive service agreement with the Permanente

Medical and Dental professional entities. KP Northwest (Kaiser Foundation Health Plan of the Northwest and Permanente Dental Associates) is the only region of the eight KP regions that offers both dental and medical care. The dental plan provides care to 250,000 members and is growing rapidly (5% to 9% per year). The KP medical plan has 550,000 members (over 10 million nationally). Dental care is delivered in 18 KP-owned group practices located in Oregon and three in Washington. Half the dental practices are co-located with KP medical practices. KP's target market is employers offering private dental insurance through full-risk capitated contracts.

KP employs 144 dentists and 190 dental hygienists. It does not contract with other group practice companies or IPAs, but it does contract with a few specialists as needed. It has formed a Preferred Provider Organization (PPO) network with 5,000 dentists in Oregon and Washington. KP has contracts with several DCOs and provides dental care to about 3,500 Medicaid members.

Willamette Dental Group (WDG): WDG was started in 1970 by two Oregon general dentists and is a privately held professional corporation that operates in Oregon, Washington, and Idaho. Organized as a staff-model dental organization, its main business is full-risk capitation contracts. It is sold as a dual choice option product to traditional dental insurance. The company has 400,000 members and is growing rapidly. It provides care in 53 dental offices and employs 1,300 people, including approximately 800 clinical employees (dentists, hygienists, and dental assistants). WDG does not contract with other dental group practice companies or IPAs.

WDG contracts with most CCOs and provides dental care to 90,000 Medicaid members. The company is developing the capacity to provide community-based care in schools, Head Start programs, etc. It also contracts with FQHCs that do not have their own dental clinics. WDG now offers stand-alone child and adult dental plans in the Oregon Health Exchange and plans to offer similar products in the Washington and Idaho Health Exchanges in the near future.

Advantage Dental (AD): AD was formed in 1994 by 30 general dentists living in rural Oregon who each contributed \$6,000 to start the company. Primarily focused on Medicaid members, the company grew rapidly as a result of acquiring several IPAs and group practices and obtaining an insurance license. AD dentist shareholders have expanded in number to 329, and the company owns and operates 32 group practices and has contracts with 1,165 private dentists in Oregon. With 350 employees, AD provides care to 300,000 Medicaid members and 60,000 privately insured patients. AD enrollment is increasing rapidly as a result of the state's expansion of the Medicaid program.

AD has several subsidiary companies that focus on care for special populations (e.g., homeless and migrant workers) and administrative services for private practices (e.g., human resources and accounts receivable).

MODA Health: The Oregon Dental Services (ODS) corporation was formed in 1955 and became part of the Delta Dental Insurance Plan Association in 1966. The original company diversified and now provides

medical and dental insurance in Oregon, Washington, and Alaska. The parent company changed its name to MODA in 2013 and now has twelve subsidiary companies.

ODS has over a million members, which is 50% to 60% of the Oregon private dental insurance market. The company's Premier PPO product covers 78% of dental members. To offer price competitive products, ODS has developed several "narrow" PPO dental networks where dentists offer steep fee discounts. ODS provides comprehensive management services to several closely affiliated dental practices that provide care to Medicaid members (Arrow Dental).

ODS parent company, MODA, is co-owner of one of the state's 16 CCOs (Eastern Oregon) along with several provider organizations.

Capitol Dental (CD): Started in 1994, CD focuses on the Oregon Medicaid market. The parent company is InterDent which owns several dental group practice companies, including Gentle Dental, Dedicated Dental, Mountain View Dental, Affordable Dental Care, Smile Keepers, and Blue Oak Dental Care. Gentle Dental and Smile Keepers are the only other InterDent companies that operate in Oregon; they target the privately insured and self-pay markets.

CD operates 25 practices in Oregon. These practices range from one to five dentists per practice. They also have a PPO network with 400 private-practice dentists. Contracted dentists are paid fee-for-service with discounted fees. In 2013 CD became a DCO that contracts with multiple CCOs to provide care to Medicaid enrollees. As such CD is financially at risk for enrolled Medicaid members.

CD has 300,000 Medicaid enrollees who are mainly concentrated in the heavily populated Multnomah and Marion counties. The company provides some dental care in community-based settings (e.g., Head Start programs and public schools) to Medicaid enrolled children.

Oregon Primary Care Association (OPCA): OPCA represents Federally Qualified Health Clinics (FQHCs) in the state of Oregon and is the primary interface between FQHCs and state government. Oregon has 32 FQHCs with over 200 delivery sites; 20 FQHCs provide dental care. Some FQHCs that do not operate dental clinics have contracts with group dental practice companies (e.g., WDG and CD) to provide dental services to their patients. Several FQHCs provide dental care in public schools, either in school-based clinics or dental vans. Currently, FQHCs employ 54 full-time equivalent dentists; in 2014 they had 192,655 patient encounters and served 47,000 patients.

Most FQHCs contract with DCOs that provide dental care to Medicaid patients. CCOs do not require DCOs to contract with FQHCs, so these are local decisions by both parties. FQHCs negotiate a visit rate with DCOs for Medicaid covered services. They also receive a federal 330 grant to cover care for low-income patients who are not Medicaid eligible. Even with the reorganized Medicaid delivery system, FQHCs have not experienced a decline in the demand for dental care by Medicaid enrolled children or adults.

Henry Schein Dental (HSD): HSD is an international company that sells dental equipment, supplies, dental record software, practice design, and practice financing. HSD has noted a

marked decline in the demand for new solo practices and an increase in demand from group practice companies. Presumably, this is because new graduates are unable or unwilling to finance starting their own solo practices. Also, group practices may have significant operating advantages over solo practices. The assumed advantages include: easier access to capital, greater capacity to manage a large staff, and more negotiating leverage with suppliers. Groups also tend to operate more hours per week.

Where the decline in solo dentists may stabilize is unknown. As a point of reference, less than 20% of physicians are now in solo practice.

Mercer: One of four companies of the international professional services firm, Marsh & McLennan, Mercer assists private and public employers manage their health insurance and other employee benefits. Oregon experienced some employee layoffs during the 2008-2009 economic recession, and a similar decline in private dental insurance enrollment. However, employers did not cancel their dental plans choosing instead to increase the amount their employees contributed to premiums. Likewise, employers have increased patient cost-

sharing (e.g., higher deductibles) and requested narrower PPO networks with steep fee discounts. As a result, patient complaints about dental care costs have increased. In contrast, employers are generally satisfied with their control of dental expenditures. The very large multistate companies are staying with national insurance companies such as CIGNA, MetLife, and Aetna, because of the complexities in managing many different state-based dental insurance contracts and because they want all their employees to have the same health benefits regardless of their location.

Nationally, Mercer offers a private health exchange for companies with 100 or more employees. In this exchange employers select the dental provider organization and employees choose from the plans that the employers offer. Usually, employers pay the same fixed premium contribution for all plans. Private health exchange enrollment is growing rapidly.

School of Dentistry, Oregon Health & Science University (OHSU): The school has 75 dental students per class and offers five specialty graduate dental programs. It is starting a residency program in General Dentistry (GPR) in 2016. Predoctoral students average \$250,000 in debt at graduation. About 40% of graduates go on for additional formal education, and the others go into a variety of positions to gain more clinical experience. Few start their own private practice immediately after graduation.

The school has an extensive history of community-based dental education and plans to increase the time senior students spend in FQHCs and other

clinics from 14 to 50 days. Some residents have rotations in KP practices.

In 2015 the OHSU academic medical center expanded its community-based and interprofessional education for medical, dental, nursing, and pharmacy students. The Rural Campus program was initiated with integrated practice education programs in two rural areas of Oregon in partnership with local provider organizations. The latter run the clinical programs and accept the financial risk. This initiative is expected to increase the availability of services and the number of graduates who practice in rural communities.

Discussion

This section synthesizes the information collected and examines the major changes taking place in the Oregon dental market. These include the growth of group practices, the interface between medical and dental practice organizations, the role of the new Medicaid system in driving delivery system changes, and the implications of these changes for dental education.

Dental Practices

The Oregon dental care market is undergoing a major reorganization at several levels for provider and payer organizations. First is the rapid growth of large group practice companies. About 42% of Oregon dentists now provide care in private and public sector group practices. The number of dentists working in group practices increased 40%, and the number in solo practices declined 21%, in just a few years (2010–2014).⁶

There is little hard evidence on the reasons for this change, but there is a consensus on two factors: dental graduates have substantial debt at

graduation and are not pursuing bank loans to start or purchase their own practices, and group practices have substantial operating advantages over solo practices. With respect to the first issue, student debt is growing nationally 5% to 10% per year, because both private and public dental schools are becoming more dependent on tuition and fees to cover their operating costs (Asch et al, 2013). Unless dental schools can find other revenue sources or reduce their operating costs, this dependence on student debt to finance dental school operating costs is unlikely to change.

The assumed advantages of dental group versus solo practices include: (a) better access to capital needed to respond to market changes; (b) greater ability to manage a large clinical and administrative staff; (c) more negotiating leverage with suppliers; (d) more capacity to purchase and manage expensive new technologies (e.g., electronic dental records), and (e) greater control over employed dentists' clinical productivity and decision-making. These assumptions have some face validity, but there is a need for more research.

So far, there is little evidence that dental companies are trying to gain a dominant share of selected geographic markets in order to increase their negotiating leverage with payers. This strategy is well-documented in medicine, and in many states (including Oregon) three or four large integrated hospital systems control 70% or more of the medical market (Robinson, 2004).

Most respondents expected that the dental group practice companies will soon undergo some consolidation. Then, a few companies may have 20% to 30% of some local markets and be

better-positioned to negotiate higher fees with private payers.

All noted that the Oregon dental market was growing more competitive as current groups expand and new dental companies enter the state. For example, a large company from California, Pacific Care, just opened several practices in Oregon. Of special interest were the efforts of MODA to provide management services (Dental Service Organization) to a group of closely affiliated dental practices. This large company now has about 55% of the traditional employer dental insurance market, has access to capital, and is rapidly diversifying.

While group practice may become the dominant dental delivery model, respondents agreed that there will always be a significant number of dentists in solo practice. Solo dentists are best suited for rural areas and appear to be the preferred delivery model for upper income patients who have longstanding relationships with their dentists, expect personalized services, and are less concerned with price. Where the decline in solo dentists may stabilize is unknown. As a point of reference, less than 20% of physicians are now in solo practice (Welch et al, 2013).

Medical and Dental Practice Interface

Some informants wondered if the state's large integrated medical care systems will eventually provide dental care. Most believed that these large medical care systems have little interest in providing dental care at this time. Further, even if they did, their first step would be to form affiliations with existing dental companies rather than develop their own dental delivery capacity. A few dental group practice companies noted that they had joined with medical companies in submitting

Preliminary studies indicate that the state has reduced the rate of increase in Medicaid medical expenditures and seen significant reductions in emergency room visits and hospital readmissions and increased enrollment in primary care homes.

integrated proposals to a few employers. But, this is rare, and most employers appear to prefer separate medical and dental insurance plans.

At the same time informants agreed that KP did have a competitive advantage as the only company in Oregon to offer both medical and dental care. In part, this appears to result from the high regard employers and the general public have for the Kaiser medical system. All agreed that the key to further integration of dental and medical plans is "hard" evidence that integrated care plans result in lower total expenditures and better health.

Some respondents raised another concern about the interface between medical and dental care companies. They noted that in Oregon and in many other states, pediatricians are reimbursed by public and some private insurers for providing dental screening and preventive services to young children. The concern was that

group practice physicians are well-positioned to provide dental screening and preventive services to both child and adult patients. Medical practices could employ dental hygienists to provide these services under the general supervision of employed or contracted dentists. Medical companies would not have to invest much capital to provide screening and preventive dental services, and potentially, these services could generate substantial revenue.

Medicaid Program

Oregon is one of the first states to reorganize its expanded Medicaid program so that all eligible members are enrolled in capitated dental companies that are regulated by state government. The Centers for Medicare and Medicaid Services has said that it wants all states to move in this direction within the next five years.⁷ Key features of the new state-run Medicaid system include annual global budgets, capitation payment so that DCOs have the financial risk, and the establishment of quality objectives that are linked to significant financial incentives and performance transparency (e.g., annual publication of group practice performance on quality indicators). The latter is important, because Medicaid members have considerable choice in selecting DCOs.

This new Medicaid delivery system has been in place for fewer than two years, so it is too early to assess its effectiveness. Even so, preliminary studies indicate that the state has reduced the rate of increase in Medicaid medical expenditures and seen significant reductions in emergency room visits and hospital readmissions and increased enrollment in primary care homes.⁸ Second, Medicaid patient satisfaction survey

ratings are high (85% satisfied). No data are available on the effectiveness of the new Medicaid dental program.

Recently, Oregon's former governor called for giving public employees (and covered dependents), under the Public Employees Benefit Board and Oregon Educators Benefit Board, the option of receiving their health benefits under a similar coordinated health care system offered to Medicaid members. These 275,000 people account for 30% of Oregon health expenditures.

Longer-term, CMS needs to change its current policy and allow dental schools, dental group practices, and community dental clinics direct access to GME funds.

To advance this plan, over the past year the state has reduced the number of private medical plans available to public employees, and some state employees have opted to receive their medical care in the new system. If this plan eventually includes medical, dental, and behavioral health services and if significant numbers of public employees enroll in this plan, it has major implications for the Oregon healthcare system. Specifically, more Oregon residents will receive health care in a publicly regulated system. Medicaid and Medicare already cover 44% of national health expenditures, and the addition of large numbers of public employees would increase the percentage substantially.

The role of FQHCs in the new Medicaid program is of particular

interest. Although FQHCs provided dental care to relatively few (47,000) of the more than one million Medicaid members, their capacity to provide dental care has expanded with new physical facilities and staff. This is in response to a significant increase in the demand for dental services by new Medicaid patients. Since these patients can now obtain dental care in the many private practices that have contracts with the DCOs, only time will tell if this demand continues.

Dental Education

The School of Dentistry at the Oregon Health & Science University is an important component of the Oregon dental system. First, it is a safety-net provider, caring for many low income residents. Second, it is the main source of Oregon dentists.

A primary employer of new dental graduates is the dental group practice companies. As noted previously, few students try to purchase or build their own practices. All the companies interviewed preferred to employ dentists who completed a residency program and had several years of clinical experience. This trend will pressure dental graduates to extend their formal education with one or more years of residency training. The problem is that there are inadequate numbers of residency positions available for graduates interested in general dentistry. Only 40% of current graduates pursue residency training in general or specialty dentistry programs.

A significant barrier to additional general dentistry programs General Practice Residency (GPR) and Advanced Education in General Dentistry (AEGD) is the lack of Graduate Medical Education (GME) support for resident stipends and training costs. At this time mainly hospitals have access to GME program funds, and most hospitals have limited

interest in general dentistry residency programs. In large part, this is because GPR residency programs require a large investment in dental facilities and equipment, and they generate limited net revenues compared to medical residents (e.g., cardiology). There is no easy solution to this problem. Longer-term, CMS needs to change its current policy and allow dental schools, dental group practices, and community dental clinics direct access to GME funds.

A related educational issue is the assignment of dental residents and dental students to clinical rotations in dental group practices. The Oregon School of Dentistry already assigns specialty residents to several-week rotations at Kaiser Permanente. The primary reason for the difference in the clinical education model for medical and dental students is that dental schools never had the option of having students and residents clinically educated in hospitals (Formicola & Bailit, 2012). With the growth of large dental group practice companies, this is an opportunity for dental schools to follow the medical clinical education model. Schools would not have to subsidize dental clinic operations, and students and residents would gain more experience providing care in "real" dental delivery systems.

Limitations

The generalizability of the Oregon experience to other states is an issue. There is good evidence that the growth of large dental group practice companies is not unique to the state of Oregon (Guy et al, 2012). Further, it appears that The Centers for Medicare and Medicaid Services wants all Medicaid medical, dental, and

behavioral health services provided by delivery organizations under global budgeting.⁹ Thus, the major changes taking place in the Oregon health care market are likely to be seen in many other states over the next several years.

This being said, states are likely to use different strategies to reform their Medicaid programs. For this reason, it is important to study and compare changes in the dental care system in several states. From the analysis of multiple local markets, the general and market specific changes taking place in the dental delivery system should become more apparent.¹⁰

Conclusions

The Oregon dental market is experiencing significant restructuring. Of special importance is the rapid growth of large dental group practice companies. Some are staff model only and others operate their own practices but also form networks of private practitioners. These groups now provide care to many Medicaid members and to a significant percentage of privately insured patients. At the same time the state's largest dental insurer has diversified into other health insurance products. The consensus is that the dental group practice companies will consolidate in the near future and, in the longer term, may affiliate with or merge with one of the state's three large integrated medical care systems. These delivery system changes will impact dental education. Graduates will need formal residency training to compete for the better positions in dental group practices, and more clinical education is likely to take place in these practices. It is important to monitor the long-term impact of these dental delivery system changes on access and oral health disparities and public Medicaid expenditures. ■

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Ethics of Gaming the System

Christopher Smiley, DDS, FACD

Abstract

Dentists justifiably bridle at having to compromise what they believe, based on evidence, is in the patients' best interests based on reimbursement rules of benefits providers. Benefits providers justifiably bridle at having to pay for services not contracted by those who purchase insurance. A particular case involving performing multiple quadrants of root planing at a single appointment is used as an example of this tension. One alternative is for the profession and the industry to seek to negotiate a win-win joint position. Another is for a few to game the system, which only makes it more difficult to reach ethical common ground.

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The views expressed are his own.



Are there ethical concerns with gaming the benefit system in insurance? The answer is yes, and the scope of the practice and who is benefiting from it may surprise you. By gaming, I'm referring to taking risks to exploit features of the system for financial gain. Typically this involves improper use of services and how they are benefited.

Why would dentists take such inappropriate risks? Likely the motivation is in response to perceived financial pressures. According to ADA figures, general dentists' incomes have been steady since the "great recession," and over a third of all practicing dentists nationally express that they are "not busy enough." All this comes at a time when dentists perceive that dental plans are becoming more restrictive in how they benefit care. For example, in 2012 dentists in Maryland received notice from United Concordia that "Periapical radiographs routinely taken in conjunction with a periodic oral examination will no longer be covered as a separate service and coverage will be denied." The carrier has since softened its policy and noted that such restrictions are consistent with ADA/FDA guidelines. But dentists voiced concerns about this blanket policy, arguing that there are legitimate reasons to provide these services (ADA, 2015).

Why is the benefit industry focusing on policy that restricts use of diagnostic and preventive services? Once again, the answer may be financial. Plan administrators are pressured by plan purchasers to control costs, and healthcare reform initiatives promote cost savings through a reduction in use of "needless services." Preventive and diagnostic services account for the lion's share of processed claims. Along with restorative services, they account for the greatest cost center for benefit plans. Controlling use of these services can be an effective cost-containment strategy for dental plans. This conclusion is consistent with a study supported by the benefit industry that showed that implementation of a risk-based benefit plan design that limits coverage to one dental cleaning annually for otherwise healthy individuals projected a \$37 savings per patient per year (PPY). These modest PPY savings translate to \$4.8 billion potentially saved each year for 175 million patients with dental insurance (Giannobile et al, 2011).

Benefit administrators use other strategies to address potential utilization abuse. A while back, I spoke with an executive from Delta Dental about its Focused Review Program, where additional documentation is required from providers identified through claims analysis for above average use of specific services. Our conversation centered on practitioners placed in

review for core buildups and how burdensome dentists found the process because they were not provided clear understanding of Delta's concerns. In our discussion I asked why Delta does not provide more direction on what they look for in benefiting a core buildup to help mentor these dentists on proper practice and claims submission. The executive's response was that they do not do so because they fear it would only teach the dentist "how to game the system."

I found this concept disappointing. I had assumed that the dentists were well-intentioned and trying to use the code that best described the care they were providing. Clearly, the benefit industry has very real concern that unethical practitioners game the system by altering documentation or needlessly modifying the care they deliver in order to have it rise to a level that would be benefited.

The ADA's Code Maintenance Committee attempted to resolve a dilemma it perceived as many of these dentists were caught in utilization review. It was determined that there was a gap in the code where dentists had no way to record and report situations where they had to build up an abutment beyond simply blocking-out undercuts or providing crown form but not to a level that addressed formal retention of the retainer. To allow for coding of such instances, the "restorative foundation code" was created. This code recognized that

Clearly, the benefit industry has very real concern that unethical practitioners game the system by altering documentation or needlessly modifying the care they deliver in order to have it rise to a level that would be benefited.

such care is a unique service, reflecting patient need, cost of care, and the liability experienced by practitioners in delivering this service. Most importantly, it created an ethical solution for recording and reporting the care provided.

The result? The Delta Dental Plans Association established a national processing policy that this code is disallowed and practitioners who use it receive an explanation of benefits stating: "The fee for this care is considered to be part of another service." Even more confounding for the dentist who correctly uses this code, the patient also receives the same explanation, possibly creating the perception that the dentist has improperly billed or is "nickel and diming" them.

Unlike denial of benefit that is based on a list of covered services chosen by the plan purchaser and may differ from plan to plan, disallowing of benefit is an overarching processing

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policy for all plans across the system. The fee for a disallowed service may not be charged to the patient, whereas the fee for a denied service often may be balance-billed.

It impresses me that a policy to disallow a service is stating that a unique form of care does not exist and it encourages the provider to bundle the fee for that care through reporting only one code for multiple services. Worse, some dentists may choose to inaccurately report a code more likely to be covered. I find such policy is counter-productive as it gives incentive for dentists to game the system and not report the codes they believe best describe the care delivered.

My concern has grown as I see a policy of not allowing care extending to other services. Recently, EOB language has appeared from Delta Dental of Pennsylvania noting “no more than two quadrants of scaling and root planing are allowable on the same date of service.” Again, this policy is inconsistent with the CDT Code, which does not indicate that only one or two quadrants of SRP therapy can be delivered at one setting. It is unclear why therapy for additional quadrants would be any less appropriate than the two that are eligible for coverage at this visit.

Evidence-based dentistry teaches us to deliver care through consideration of three tenets: the best available evidence, the knowledge and expertise of the care provider, and the needs and desires of the patient. Disallowing benefit for more than two quadrants of SRP at one visit is inconsistent with current evidence, which shows no difference in outcomes between one-stage full-mouth care and per

quadrant care (Santucci et al, 2016). Literature supports that choice of care should involve patient preference (Eberhards et al, 2015). Thus, this policy needlessly creates a barrier for addressing the desires of patients who may be best served through care in as few visits as possible.

Spreading care out over multiple visits raises concerns beyond patient convenience and satisfaction. It also negatively impacts use of needed services, as a percentage of patients not receiving full-mouth care will not return for treatment of individual quadrants. Thus, this policy creates ethical dilemmas as it adversely impacts the patient’s access to care in its effort to reduce the success of some dentists who game the system.

If the payer’s motivation is to address fraudulent billing within their provider network, I believe it is inappropriate to penalize patients and the overwhelming majority of honest practitioners through blanket application of a processing policy that goes against the current science. It is misguided to use processing policy to address suspected fraudulent behavior as any provider intent on gaming the system need only limit his or her care to two quadrants per visit to “fly under the radar.” Alternatively, of course, some unscrupulous practitioners bill for multiple quadrants they do not actually deliver at a single appointment. A more transparent and honest way to address claims abuse is through utilization review when aberrant behavior is identified.

So why would payers introduce policy to disallow coverage for care when contract provisions already enable them to deny a benefit? Perhaps it is because payers are gaming a system. A “disallow policy” may be seen as a strategy by payers to discourage use of new codes, pressuring dentists

to bundle services that administrators view as costly and not unique. Additionally, using a disallow-processing policy prevents participating providers from charging plan participants for these services, based on obligations to abide by the processing policy found in the Provider Agreement (Delta Dental Plans, 2015). This may differ in some states from benefit denied by plan contract, where laws permit patients to self-pay their “in-network dentist” for noncovered services they choose to receive.

Are there ethical concerns with gaming of the benefit system? The answer is yes, and payer policy may be contributing to this abuse. Dentists must use the codes that best describe the care provided. It is unethical to use a code simply because it is more likely to receive benefit from a plan. Additionally, it is unethical for a dentist to alter treatment or falsely document care to increase the likelihood of plan coverage.

At the same time, payer policy must not discourage use of codes that properly report care, if that care is covered in the relevant policy. Blanket processing policies that editorialize on the merits of a service drive recording and reporting of that care “underground.” If the payer’s motivation is to address fraudulent billing within their provider network, I believe it is inappropriate to penalize patients and the overwhelming majority of honest practitioners through blanket application of a processing policy that goes against the current science. Furthermore, although it is a laudable goal of healthcare reform initiatives to promote cost savings through a reduction in use of “unnecessary services”; policy that intentionally discourages use of appropriate services is an unethical strategy to achieve cost containment.

If the payer’s motivation is to address fraudulent billing within their provider network, I believe it is inappropriate to penalize patients and the overwhelming majority of honest practitioners through blanket application of a processing policy that goes against the current science.

If these issues were truly about gaming the system, perhaps we should look for a “win-win” proposition. For an ethics-based profession, I find no such option exists. Both dentists and benefit plan administrators are best served to address the needs of patients and assist them in accessing that care. Playing games has no place in this equation.■

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Dental Visit Utilization

Procedures and Episodes of Treatment

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Abstract

This investigation describes the factors associated with patients' initial decisions to seek dental care, including the corresponding number of visits and the types of services received during a dental visit episode. Data came from the nationally representative Medical Expenditure Panel Survey (MEPS). Episode-specific dental visits were further classified into three categories, based on type of services received: preventive, treatment-based, or a combination. Among individuals with a visit episode, 78% of the episodes consisted of a single visit. Within an episode, as the number of visits increased, the proportion of initial visits that were of the preventive type decreased. The findings showed that the primary driver of oral healthcare utilization in the United States is preventive care. As new health policy is developed, it is hoped that prevention will remain a central focus in dentistry and that all segments of the population will be able reap its benefits.

Oral health is a necessary component of overall health, essential for eating, needed for speaking, and comprise an important component of a positive self-image (DHHS, 2000). Most dental disease can be prevented. According to *Oral Health in America: A Report of the Surgeon General*, disease prevention and health promotion can be achieved through a combination of community, professional, and individual strategies. Provider-based professional strategies include preventive measures and, when needed, treatment procedures. Dental services include preventive services such as the use fluoride, the application of sealants, routine oral examination, and teeth cleanings,

while more complex services include fillings, dentures, crowns, bridges, tooth extractions, implants, inlays, root canals, and gum care.¹ According to the Center for Financing, Access, and Cost Trends, Agency for Healthcare Research and Quality: Medical Expenditure Panel Survey Household Component, in 2009, there were about 307 million people in the community population of the United States and approximately 41% of the population had at least one dental visit during the year. Among working-age adults who had a visit during 2009, preventive procedures accounted for 31% of the almost 300 million procedures provided to working age adults by dentists and dental hygienist during that year, and 45% of all procedures were diagnostic (Manski et al, 2013a). Among persons who received at least one dental procedure, 85% had a diagnostic visit, 80% had a preventive visit, 20% had a restorative visit (filling), 16% had a prosthetic visit (crown, bridge, or denture) and less than 11% had an oral surgery visit (extraction).

While much is known about dental care utilization rates and the mix of treatment procedures obtained by patients, less is known about the factors that act to initiate a visit, visit sequence, and the relationship of this sequence to a specific set of procedures. The purpose of our current study is to focus on this relationship between a decision to seek care, the type of care

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received, and the number of visits that are related to the initial decision to seek care. Using data available from the Medical Expenditure Panel Survey (MEPS), we identify groups of related visits and then aggregate these dental visits into unique episodes of care that provide information about the factors that initiated the series of visits.

Methods

The MEPS is a nationally representative survey of the U.S. civilian noninstitutionalized population, conducted annually since 1996 by the Agency for Healthcare Research and Quality (AHRQ).² The survey provides national estimates of healthcare use, expenditures, sources of payment, and health insurance coverage, as well as information on respondents' health status, sociodemographic characteristics, employment status, access to health care, and satisfaction with health care. Each year a new MEPS panel is sampled from the respondents to the previous year's National Health Information Survey (NHIS), another nationally representative survey conducted by the National Center for Health Statistics (NCHS). Since 2005, about 17,000 NHIS responding individuals have been sampled into each MEPS panel. Each MEPS household is interviewed up to five times over a two and one-half year period about their family's healthcare use for two consecutive years.

The population for this study consisted of 13,326 MEPS Panel 15 respondents with five rounds of

interview data in 2010-2011.

The nonorthodontic dental visits of these respondents were ordered chronologically and classified into "episodes" based upon a 90-day separation between two consecutive visits. For the purpose of this analysis, a visit constituted an encounter with one or more dental providers on the same day. For each respondent, the first visit was classified into the first episode. If the next visit (if any) occurred within 90 days, it was classified into the same episode. Otherwise it was classified into a new episode. Each successive visit was similarly compared to the previous one until all the visits had been classified. To ensure that the first and last episodes were separated by 90 days, the episodes with any visits in the first or last 90 days of the panel were excluded. As Panel 15 was fielded between January 1, 2010 and December 31, 2011, episodes with any visits prior to April 1, 2010 or after October 1, 2011 were excluded.

Each visit within each episode was then classified into one of three visit types based upon the preventative or treatment procedures reported by respondents as having been received on that visit. Preventive (Px) procedures included cleanings, fluoride, or sealant treatments, and periodontal recall. Treatment (Tx) procedures included fillings, abscesses, dentures, crowns, bridges,

The purpose of our current study is to focus on this relationship between a decision to seek care, the type of care received, and the number of visits that are related to the initial decision to seek care.

These findings were consistent with earlier analyses of national data and supported the hypothesis that having financial resources and access to third-party reimbursement was strongly associated with utilization.

surgery, extractions, implants, inlays, root canals, tooth whitening, TMD/TMJ, and other. Diagnostic procedures, such as general examinations and x-rays, were not considered as a separate category as these were generally reported together with one or more treatment or preventive procedures. The three visit types included: (a) Px; (b) Tx; and (c) Px + Tx.

Results

Table 1 shows estimates of the percentage of people by the number of dental episodes in the middle 18 months of Panel 15 overall and by sociodemographic group. Half the population (49.7%) had no episode, a quarter (24.3%) had one episode only, a sixth (16.9%) had two episodes, and less than a tenth (9.2%) had three or more episodes.

As shown in Table 1, persons under 18 years of age were less likely to have no episodes and more likely to have a single episode compared to the overall population, while persons ages 18-34 and 35-54 were more likely to have no episodes and less likely to have two or three or more episodes, and persons ages 55-64 and 65+ were more likely to have three or more episodes.

In addition to age, other significant correlates of the percentage of persons by number of episodes included sex, race/ethnicity, region, poverty, and dental insurance. Compared to the overall population, males were more likely and females less likely to have no episodes. Hispanics and non-Hispanic Blacks were more likely to have no episodes and less likely to have two or three or more episodes than the

Table 1. Percent distribution of persons by number of episodes overall and by sociodemographic characteristic, 2010–2011.

Demographic	Episodes per visit			
	0 (N=7,465)	1 (N=3,112)	2 (N=1,839)	3+ (N=910)
Overall	49.7 (0.9)	24.3 (0.6)	16.9 (0.5)	9.2 (0.5)
Age group				
<18	39.4 (1.5)	29.0 (1.2)	21.8 (1.1)	9.8 (0.9)
18-34	57.9 (1.3)	24.5 (1.0)	13.0 (0.9)	4.6 (0.6)
35-54	54.1 (1.1)	22.4 (1.0)	15.0 (0.8)	8.5 (0.7)
55-64	43.6 (1.8)	22.7 (1.5)	20.1 (1.4)	13.6 (1.2)
65+	48.3 (1.7)	22.0 (1.3)	16.8 (1.2)	13.0 (1.2)
Sex				
Male	53.1 (1.0)	23.0 (0.7)	15.8 (0.6)	8.1 (0.5)
Female	46.5 (1.0)	25.4 (0.7)	17.9 (0.7)	10.2 (0.6)
Race/ethnicity				
Hispanic	62.2 (1.5)	23.8 (1.0)	10.0 (0.8)	4.0 (0.5)
Non-Hispanic				
Black	60.7 (1.5)	22.4 (1.2)	12.7 (0.9)	4.2 (0.6)
Asian	55.5 (2.4)	23.7 (2.0)	13.4 (1.4)	7.4 (1.2)
Other	44.3 (1.2)	24.7 (0.7)	19.5 (0.8)	11.4 (0.7)
Region				
Northeast	49.1 (2.8)	23.9 (1.4)	18.2 (1.6)	8.8 (1.1)
Midwest	42.5 (1.8)	24.8 (1.3)	19.8 (1.0)	13.0 (1.4)
South	54.5 (1.2)	23.4 (0.8)	14.8 (0.9)	7.3 (0.8)
West	49.2 (1.6)	25.4 (1.1)	16.6 (1.1)	8.8 (0.9)
MSA				
MSA49.0 (0.9)	24.7 (0.6)	16.9 (0.6)	9.5 (0.5)	
Non MSA	53.6 (2.2)	22.0 (1.3)	17.0 (1.7)	7.5 (1.1)
Poverty				
Poor-low income	62.8 (1.0)	22.3 (0.8)	10.6 (0.6)	4.4 (0.4)
Mid-high income	43.2 (1.1)	25.3 (0.7)	20.0 (0.7)	11.5 (0.7)
Dental insurance				
Private	37.2 (1.3)	27.0 (0.9)	22.6 (0.9)	13.1 (0.8)
Public	53.7 (1.7)	27.5 (1.3)	13.9 (1.0)	4.9 (0.7)
None	65.9 (1.1)	19.1 (0.7)	9.8 (0.6)	5.1 (0.5)

Source: 2010 and 2011 Medical Expenditure Panel Survey (Standard errors in parentheses).

overall population. The non-Hispanic other group (mainly Whites) were less likely to have no episodes and more likely to have two or three or more episodes than the overall population.

Compared to the overall population, persons living in the Midwest were more likely to have two or three or more episodes and less likely to have no episodes; and those in the South were the opposite—less likely to have two or three or more episodes and more likely to have no episodes. Persons in poverty or with low income were more likely to have no episodes and less likely to have one, two, three, or more episodes; and those with middle-to-high incomes were the opposite. Finally, persons with private dental insurance were more likely to have one, two, three, or more episodes and less likely to have none; and those with no dental insurance were the opposite. Persons with public dental insurance were more likely to have no or one episode, compared to the overall population, and less likely to have two or three or more episodes.

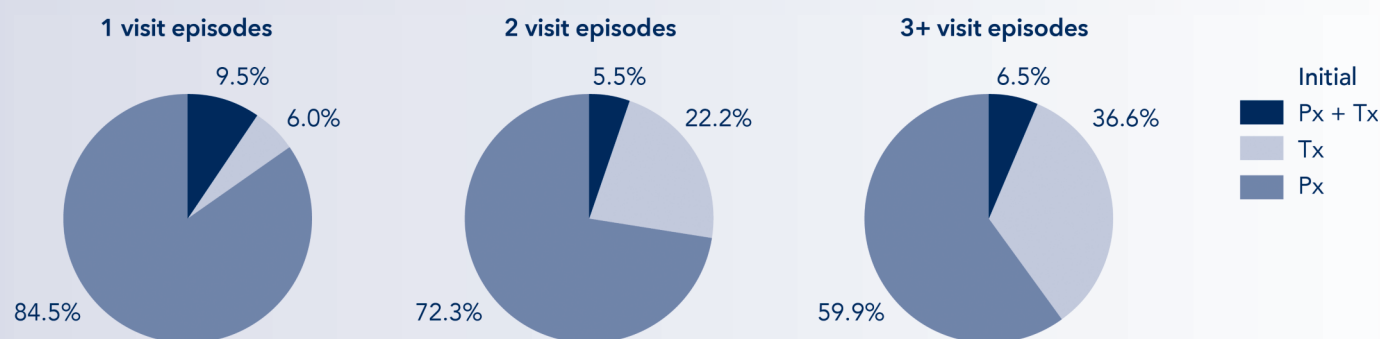
Table 2 presents the percent of episodes by the number of visits, overall, and by sociodemographic group. Over three-fourths (77.7%) of the overall episodes consisted of a single visit, 14.2% consisted of two visits, and 8.2% consisted of three or more visits. The percentage of single-visit episodes decreased and the percentage of two and three-plus visits per episode increased with age. Other significant correlates of the percentage of episodes by number of visits included race/ethnicity and region of the country. Compared to persons overall, non-Hispanic Blacks and persons living in the South were more likely, while those for persons living in

Table 2. Percent distribution of episodes by number of visits overall and by sociodemographic characteristic, 2010–2011.

Demographic	Visits per episode		
	1 (N=7,517)	2 (N=1,345)	3+ (N=745)
Overall	77.7 (0.6)	14.2 (0.5)	8.2 (0.4)
Age group			
<18	82.0 (1.1)	13.3 (0.9)	4.8 (0.6)
18-34	79.5 (1.4)	13.9 (1.1)	6.7 (0.8)
35-54	77.4 (1.1)	14.1 (1.0)	8.5 (0.7)
55-64	74.8 (1.5)	14.4 (1.2)	10.8 (1.0)
65+	72.2 (1.5)	15.7 (1.3)	12.1 (1.0)
Sex			
Male	77.6 (0.8)	14.0 (0.7)	8.4 (0.5)
Female	77.7 (0.8)	14.3 (0.7)	8.0 (0.5)
Race/ethnicity			
Hispanic	76.1 (1.4)	15.5 (1.0)	8.4 (1.0)
Non-Hispanic Black	81.8 (1.7)	11.7 (1.2)	6.5 (0.9)
Non-Hispanic Asian	81.0 (1.7)	12.4 (1.6)	6.6 (1.0)
Non-Hispanic other	77.3 (0.7)	14.3 (0.6)	8.4 (0.4)
Region			
Northeast	76.4 (1.5)	14.1 (1.3)	9.5 (0.9)
Midwest	77.2 (1.2)	14.7 (1.0)	8.1 (0.6)
South	80.5 (1.0)	12.7 (0.8)	6.9 (0.6)
West	75.3 (1.0)	15.6 (0.9)	9.0 (0.8)
MSA			
MSA	77.8 (0.6)	14.0 (0.5)	8.2 (0.4)
Non MSA	76.6 (1.9)	15.2 (1.5)	8.2 (0.9)
Poverty			
Poor or low income	76.5 (1.3)	14.8 (1.0)	8.7 (0.7)
Mid or high income	78.0 (0.7)	14.0 (0.5)	8.0 (0.4)
Dental insurance			
Private	77.3 (0.7)	14.5 (0.6)	8.2 (0.5)
Public	80.0 (1.6)	13.4 (1.2)	6.6 (0.8)
None	77.7 (1.3)	13.4 (1.0)	8.9 (0.8)

Source: 2010 and 2011 Medical Expenditure Panel Survey (Standard errors in parentheses).

Figure 1. **Distribution of initial visit type by number of episode visits.**



Source: 2010 and 2011 Medical Expenditure Panel Survey.

the West were less likely, to have episodes of a single visit.

Figure 1 presents the distribution of the type of initial visit by the number of visits in the episode. As the number of episode visits increased, the percentage of initial visits that were preventive-only decreased, and the percentage that were treatment-only increased. Specifically, the one-visit episodes were 85% preventive-only and 6% treatment only; the two-visit episodes were 72% preventive-only and 22% treatment-only; and the three-plus visit episodes were 60% preventive-only and 34% treatment-only.

Figure 2 presents the distribution of the type of follow-up visits by the type of initial visit among the multivisit episodes. Among the multivisit episodes that were initially preventive only, about half the follow-ups (48.1%) consisted of only treatment procedures and another 21.4% consisted of both treatment and preventive procedures.

Nearly a third (30.5%) of the follow-ups were preventive only. Among the episodes that were initially treatment only, a smaller proportion of the follow-ups (43.3%) were treatment only and a higher proportion (28.3%) were treatment and preventive. Among the episodes that initially were treatment and preventive, the percentage of follow-up visits that were treatment only (53.2%) was similar to the initially preventive episodes and the percentage of follow-up visits that were both treatment and preventive (27.8%) were similar to the initially treatment episodes. These episodes had the fewest preventive only follow-up visits (19%).

Discussion

The purpose of this analysis was to identify the most common reason for the initiation of a dental episode among a nationally representative sample of children and adults and to determine whether the initial dental visit in a given episode was predictive of subsequent visits in terms of number and type of service. The MEPS data showed that about 50% of

the U.S. population reported having at least one dental visit during an 18-month period, (last nine months of 2010 through first nine months of 2011). Children less than 18 years of age, females, residents of metropolitan areas, residents of the Midwest, persons with middle-to-high incomes, those with private dental insurance, and members of the non-Hispanic other population group (consisting primarily of non-Hispanic whites) were more likely to visit the dentist. Persons who had no dental insurance were least likely of all population groups to have reported a visit during the 18-month time frame. Hispanics and those in the poor-to-low income group were also less likely to have visited a dentist. These findings were consistent with earlier analyses of national data and supported the hypothesis that having financial resources and access to third-party reimbursement was strongly associated with utilization (National Center for Health Statistics 2014; Christian et al, 2013; Dye et al, 2007).

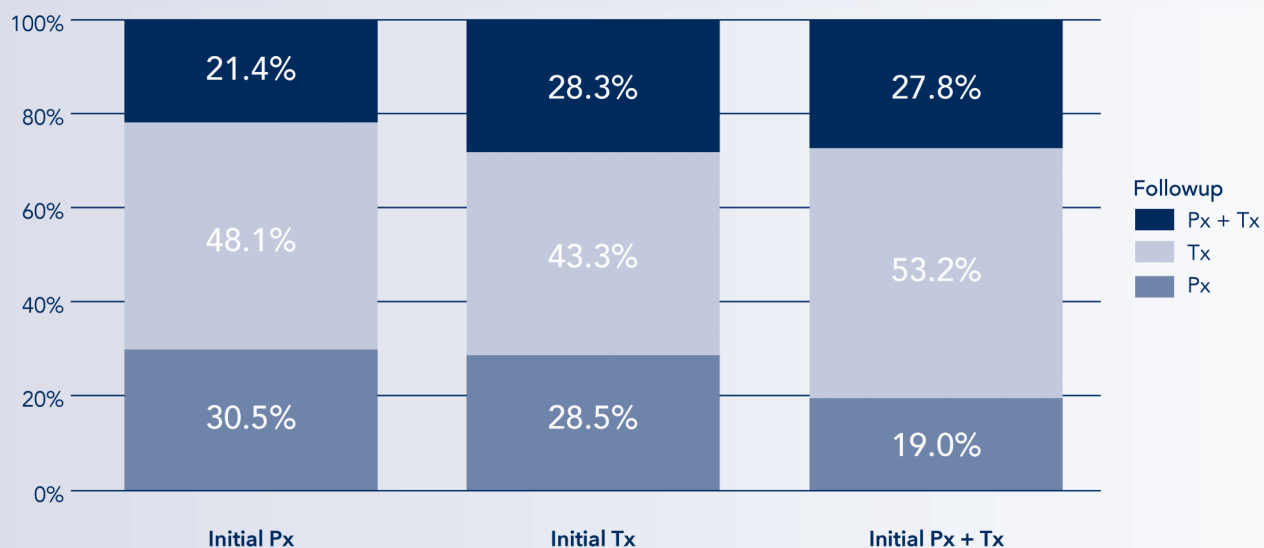
Our analyses also showed that the most common reason for an initial dental visit was to receive preventive services. These findings reflect the preponderance of preventive services, as a proportion of all dental services, provided in the nation (Manski et al, 2013b). There are three ramifications of these results. First, Americans equate dental visits with the receipt of preventive services. Policymakers who are considering changes to dental insurance benefits within the private marketplace or within the framework of government-sponsored programs may want to consider that preventive care is most commonly provided in the initial visit of a dental episode. Second, preventive dental services are provided by both dentists and dental hygienists. Given that dental hygienists earn lower salaries than dentists and are able to practice in a variety of public health settings (such as schools and nursing homes), they continue to represent a cost-

effective means of providing essential oral health care services to the public during trying economic times. Expanding this logic, those who extend the reach of oral health services may additionally provide a practical way of bringing preventive dental services to rural and impoverished populations whose needs have been largely unmet to date (Friedman & Mathu-Muju, 2014; Edelstein, 2011). Finally, dental visits that focus on prevention provide an excellent opportunity for the early detection and prompt treatment of disease, as well as the provision of health education.

The American Dental Association defines health literacy as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate oral health decisions” and recognizes limited health literacy as a potential barrier to effective prevention, diagnosis, and management of oral

As the number of episode visits increased, the percentage of initial visits that were preventive only decreased, and the percentage that were treatment only increased. Specifically, the one-visit episodes were 85% preventive-only and 6% treatment-only.

Figure 2. **Distribution of follow-up visit type by initial visit type among multivisit episodes.**



Americans equate dental visits with the receipt of preventive services. Policymakers who are considering changes to dental insurance benefits within the private marketplace or within the framework of government-sponsored programs may want to consider that preventive care is most commonly provided in the initial visit of a dental episode.

disease (American Dental Association, 2014; Faiella, 2013; Podschun, 2012). The health education provided during preventive visits could function to improve health literacy of patients and therefore potentially improve oral health in the population (Guo et al, 2014).

The remaining purpose of this analysis was to determine whether the initial decision to seek care may influence subsequent visits for an episode of care. Our analysis showed that, among individuals who had multiple-visit episodes, treatment services or prevention-plus-treatment services, together, accounted for the majority of services received after the initial dental visit. Said another way, multiple visits were associated with restorative work. Regardless of the reason for the initial visit, most individuals who returned for subsequent appointments were receiving some form of treatment (either alone or in combination with preventive services). For those who visited a dentist initially for a preventive service, it would appear that new treatment needs were being identified by the dentist that required follow-up. For those whose initial visit included treatment only or prevention plus treatment services, it would seem that either new treatment needs were identified or the treatment driving the initial visit required multiple appointments. Given that complex restorative work (e.g., crowns and bridges) or prosthetics (e.g., removable partial dentures or full dentures) often require several visits for fabrication, delivery, and adjustment, this latter explanation is plausible.

To our knowledge, this study represented the first to describe oral healthcare utilization in the United States based on discrete episodes of care. Because MEPS is a national survey, our findings represented many segments of the U.S. population, in terms of both demographics and geographic location. Despite these important strengths, our study had two notable limitations. First, the utilization data were self-reported. It is possible that survey participants misreported their actual utilization behaviors, either intentionally or otherwise. However, an investigation comparing dental visit data derived from three different national surveys suggested that MEPS provides one of the most accurate measures of utilization in the United States (Macek et al, 2002). The second limitation is related to the use of utilization data to derive motivations. MEPS never directly asked whether patients chose to visit a dentist for preventive- or treatment-related reasons. As such, we could only infer the rationale for each dental visit from those services that were reported as being provided during those particular visits. Although we have little reason to believe that reported services differed much from what was actually provided, it is possible that the services provided during an appointment were not necessarily the same services that initially drove the appointment.

Future studies might explore motivation in more detail. For example, it would be useful to know whether problems alone motivate a dental appointment or whether a problem juxtaposed against some other type of reminder (e.g., a recall notification from the dental practice or a family member's concurrent dental appointment) is a more powerful initiator of action. In

Our analysis showed that the primary driver of utilization in the United States was preventive dental services.

addition, our analysis showed that younger adults (18-34) were less likely to have a dental visit than were other age groups. Motivation to seek dental care is also dependent on circumstances that are unique to specific stages of life. Finally, our study was unable to assess the role that practitioners may play in motivating treatment.

Our analysis showed that the primary driver of utilization in the United States was preventive dental services. These findings are consistent with a profession that has always emphasized prevention and has been credited with one of the top-ten public health achievements of the twentieth century —community water fluoridation (Centers for Disease Control and Prevention, 1999). As health care in the United States continues to evolve, it is encouraging to note that dentistry is focusing its resources on the prevention of disease, both at the community and patient levels. As new health care policy is developed, it is hoped that prevention remains a central construct in dentistry and that more segments of the population enjoy the benefits. ■

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- 1 www.meps.ahrq.gov/mepsweb/data_files/publications/cb17/cb17.pdf
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Salt Fluoridation

An Adjunct to Community Water Fluoridation

Jack M. Saroyan, DDS, FACD

Abstract

After 70 years of community water fluoridation in the United States, still over 100 million people do not have the benefits of dietary fluoride. The saturation level may have been reached. Salt fluoridation can be an adjunct method for improving children's dental health in noncommunity water fluoridation areas. It is used worldwide and the World Health Organization recommends it when water fluoridation is not feasible as it is equally effective in the prevention and control of dental caries. The author calls for a debate on this proposal by organized dentistry.

Community water fluoridation, (CWF), was first introduced in the United States around 1945 (Dean, 1934). At the time, it was accepted that only communities of over 10,000–50,000 people could economically afford to implement this public health initiative. However, water fluoridation could reach half of the United States population of about 200 million then. In 2012, the Centers for Disease Control and Prevention reported that approximately 200 million people in the U.S. have access to CWF.

After 70 years our nation's population has grown to about 320 million people. One-third of our population, over 100 million people, is without the benefits of fluoridation. Community water fluoridation is clearly losing penetration, due partly to an increasing population that is living in smaller communities or using well water.

We can do better.

There is another kind of fluoridation that uses table salt, called salt fluoridation (Marthaler & Petersen, 2005). This form of fluoridation has been successfully used in Switzerland for more than 58 years. It is predictably used throughout Europe, plus Central and South America in dozens of countries. Just as many countries use this method of decay prevention and control as use CWF, and many countries produce table salt that is both iodized and fluoridated since these elements are compatible

micronutrients. In some of these countries, it is the only kind of salt available. In other countries there is a choice of other types of salt.

Fluoridated salt has been approved by the World Health Organization (WHO) to be as effective as CWF in preventing dental decay. In a special conference on oral health that convened in Geneva, in May 2007, the WHO passed a resolution (WHA.60-17) that said when water fluoridation was not economically feasible, salt fluoridation should be implemented. Although the United States is a member of the WHO and U.S. representatives were present, no policy changes or notifications of this resolution to the profession or the public have been made.

Arguments Against

What are some of the arguments against the implementation of salt fluoridation as an adjunct to CWF in the U.S.?

Some dentists who are proponents of CWF have said that having salt fluoridation available would give the antifluoridationists another reason to oppose the further implementation of CWF. This is certainly possible. Another argument may be made that if children under nine years old living in CWF areas also use the fluoridated salt, they would get too much fluoride and that may cause fluorosis. This too is certainly possible.

Hershel Horowitz, in a 1999 lecture and subsequent article (2000) about national programs of community

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fluoride usage, said that a country should have one or the other type of fluoridation. Dr. Horowitz was an eminent public health dentist and researcher. Ironically, he was one of the researchers from America that oversaw the earliest salt fluoridation trials in Antioquia, Colombia conducted by the U.S. Public Health Service (USPHS) in the mid-1960s. The results of these trials provided a clear indication of the beneficial impact of fluoridated salt.

In spite of this research, some American public health dentists call CWF the gold standard and look down their noses at the usefulness of salt fluoridation.

Salt fluoridation was reviewed in the *Journal of the California Dental Association* in June 2013 (See Pollack, 2013; Saroyan 2013). Dr. Howard Pollack, a renowned CWF spokesman and researcher, concluded that “owing to the risk of increased fluoride intake from both fluoridated water and fluoridated salt, it is recommended that one or the other be used in individual countries.”

Although the arguments of Drs. Horowitz and Pollack are plausible, there is yet to be any field research demonstrating the adverse impact of alternative fluoride delivery systems in a given community.

Since 2012, the U.S. Food and Drug Administration has had a petition for consideration of a regulation to allow

Now that our citizenry has become more strident and vocal in these matters, they have reversed CWF programs. The anti-fluoridationists have prevailed with false data and simply scared folks into making illogical decisions.

the addition of potassium fluoride to iodized table salt for both the prevention of dental caries and iodine deficiency disease. Neither the dental profession, the Centers for Disease Control and Prevention nor the USPHS have offered any comment or taken a position for or against this regulatory change.

In February 2016 the FDA responded to deny the petition because of “failure to demonstrate that such use would be safe pursuant to the requirement of Section 409 of the FD&C Act.” Also the petition did “not provide sufficient information that shows that the estimated cumulative exposure is safe.” The petition may be viewed by going to the government website, www.regulations.gov, for comments by

the public and interested professionals on the regulatory changes. The docket number is FDA 2012-p-1179.

Arguments For

It may be true that anti-fluoridationists would seek to use the efficacy of salt fluoridation to put down CWF. But it is equally true that parents of children who will never have CWF should have the option to buy table salt with known and proven health benefits for their children and themselves as they do in the rest of the world. Sometimes the argument for perfection can clock access to basic improvements.

Fluorosis is a genuine concern and has been ever since fluoride has been added to toothpaste and other products (Pendrys, 2000). That is why toothpaste manufactures are required to put a warning on all fluoridated toothpaste. The salt manufacturers can be directed to have labels restricting the use of fluoridated salt in CWF areas as well. It is known that wherever any kind of fluoridation is available, there may be some fluorosis. Young children, under the age of eight must be monitored so that they do not swallow fluoridated toothpaste. However, as dentists, we know that there are several degrees of fluorosis that are not cosmetically significant. Moreover, the marketplace will control where fluoridated salt is sold. A supermarket supply buyer would not purchase and try to sell a

product that restricts usage in their area. As much as there is a risk of mild fluorosis with both types of fluoridation available in one country, the risk of dental caries is well-known to affect 99% of children worldwide. According to the USPHS report this year, “more than 90% of dental fluorosis in the

A reasonable position can be taken that CWF is better for large communities and salt fluoridation is better for small towns and children on well water.

United States is the very mild form, most appearing as barely visible lacy white markings or spots on the enamel.” By comparison, the incidence of fluorosis to the incidence of dental caries is miniscule.

The USPHS *Recommendation for Fluoride Concentration in Drinking Water for the Prevention of Dental Caries* announced in April 2015, that it is lowering the recommended fluoride concentration range to 0.7mg/L. This change was recommended for several reasons. Small amounts of fluoride are more prevalent in the diet of children because of vitamins and fluoridated water being added to infant formulas and other foods and beverages today. It was also reduced because of the increase of very mild to mild fluorosis.

In spite of the labeling that recommends a pea-size amount, unsupervised children use too much and then the very young ones swallow the toothpaste. Now that the CWF recommendation for fluoride has been reduced to 0.7 mg/L, the incidence of fluorosis will be reduced even further. The salt manufacturers can be directed to add potassium fluoride to iodized salt to achieve 0.7 parts per million.

In an article in the *Journal of the American Dental Association*, Dr. William Bowen (2013) concluded that “in most cases fluorosis is a minor cosmetic defect that should not be cause for alarm. Dentists should educate their patients about the optimal range of fluoride intake for caries protection, sources of fluoride and the possibility of fluorosis.”

Dental fluorosis can be a minor risk due to too much fluoride in the diet from birth to age nine. Beyond this age, due to completion of enamel maturation, children and adults can have greater amounts of fluoride in their diet without any adverse effects. According to the Food and Nutrition Board of the Institute of Medicine, children between the ages of four and eight can tolerate 1.0 mg of fluoride per day; between ages nine-13, 2.0 mg; ages 14-18, 3.0 mg; ages 19 years and over, 4.0 mg, without adverse effects (www.nap.edu/read/5776/chapter/10).

The Environmental Protection Agency allows an upper limit for adults to 10.0 mg per day. Therefore, if a child over the age of nine or an adult used fluoridated salt and was living in an area of CWF, they would not have any adverse effect.

One of the main disadvantages of CWF is that it seldom reaches the most vulnerable children living in rural and farming communities. These areas need the modality of salt

fluoridation because these children usually do not have access to dental care that is available in the larger communities.

There are certainly ethical threads in this argument. We practitioners should always give our patients alternative treatment plans. We teach our dental students to do the same, not only to respect patient autonomy and choice, but also because this is ethical behavior on our part. We should expect no less from our national health agencies and our professional organizations.

Moreover, it seems strange to me that we can buy fluoridated toothpaste, fluoridated mouthwash, fluoridated supplements, use fluoride gels and fluoride varnishes, all of which may contribute to fluorosis, but we cannot buy fluoridated salt.

In states like Minnesota and Alaska, which have remote and isolated populations, treatment is dependent on surrogate dentists and USPHS dentists. These are sparsely populated areas where no dentist can make a living. Salt fluoridation in these areas would reduce dental caries by 40% to 60%. If accompanied by patient dietary education and oral hygiene instruction, dental decay may be reduced substantially. Prevention of dental diseases is still the foundation of our profession. If fluoridated salt were available, it would be so inexpensive that it could be given free to these communities. In cases of children whose parents qualify for welfare programs and reside in non-CWF areas, fluoridated salt can be given free to them as well.

Cost Considerations

Ecuadorian public health dentist Saskia Estupinan-Day (2005) claims that salt fluoridation is 80 to 100 times cheaper than CWF. For many years, Mexico City had water fluoridation for their population of about 17 million people. They recently converted to salt fluoridation throughout the country with the exception a couple of areas that have high concentrations of fluoride in the water. This was done to reduce the costs of water fluoridation and increase the benefits of dental disease prevention to all the people.

This is not to say that the author recommends changing what we use in our country. However, aside from the large initial costs of CWF, as described in California, there is a continuing annual maintenance cost. The purchase of a box of iodized and fluoridated salt may be one of the cheapest items in a grocery store.

There has been growing resistance to continuing CWF in some communities due to maintenance costs. I believe these community leaders are being penny-wise and dollar-foolish. For example, Tampa-St. Petersburg, Florida, and Dallas, Texas, went back and forth on this issue until they reestablished the funds to continue to fluoridate the water. The Dallas contract to fluoridate water only lasts three years.

As an example of maintenance costs, the San Francisco Water Department spent over \$1.1 million last year on the maintenance of the fluoridation system that serves 2.6 million people in and around the city. That equates to about 40 cents per year per person. As reasonable as these costs are, when it is difficult to see the

value of the expenditures, it becomes easy to make budgetary cuts.

What is more alarming is the discontinuance of CWF. The most recent effort to reestablish CWF in Portland, Oregon, was defeated for the fourth time, by a vote of 60% against and 40% in favor.

I surmise that, initially, the decision to fluoridate has been made by the water board managers with input from the dental community. Now that our citizenry has become more strident and vocal in these matters, they have reversed CWF programs. The anti-fluoridationists have prevailed with false data and simply scared folks into making illogical decisions. It is the same kind of thinking that some parents have about the refusal to have their children vaccinated. If anti-fluoridationists have a point in saying that everyone should not be forced to drink fluoridated water just because a

By comparison, the incidence of fluorosis to the incidence of dental caries is miniscule.

slight majority of residents in a community favor it, so residents in a community where a majority of residents decline CWF should have some access to inexpensive and readily available fluoride.

The debate over whether to fluoridate Honolulu, Hawaii, drinking water has raged for decades. In 2004, the City and County supported a fluoridation-ban bill, but it was voted down five to one. The only places that can have water fluoridation are on military installations. Without a doubt, the children and young adults

of Hawaii would benefit from the purchase and use of fluoridated salt.

In California, because we have so many rural small towns, the penetration of CWF is only about 62%, which is lower than the national average of about 67%. San Diego, having one of the state's larger population centers, has had an ordinance opposing CWF since 1954. However, from 1999 until 2009 and working to find funding and get approval, completion and implementation was accomplished in 2011. After this protracted period, the proponents could finally claim a victory. Some might say it was a too long delayed victory. Had salt fluoridation been available, as in Switzerland, the children in this area could have had a DMFT score of about 2.0 instead of a score of 5.0 or 6.0.²

In order to increase water fluoridation throughout the state, the California Dental Association created some funding and designated the CDA Foundation to oversee expansion of CWF throughout the state.³ The foundation targeted Santa Clara County (which includes Silicon Valley) and the City of San Jose. They started the program in 2012 and will be able to implement fluoridation for two-thirds of the county by 2017 (Stocks & Pollack, 2012). The other one-third will not go online until 2019. The facility cost will be around \$8 million. San Jose's costs will be approximately twice as much and the project will take even longer.

San Jose and Santa Clara have a combined population of about 2.8 million residents.⁴ Salt fluoridation was never considered as an adjunct, in spite of these tremendous costs and the uncertainty of when it would all happen. Meanwhile, about 24 million people, of whom about six million are

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children, do not have access to dietary fluoride that can be provided by fluoridated salt.

Some major American salt manufacturers have foreign salt plants and are already making fluoridated salt for these other countries. Once fluoridated salt is available, it will be just as efficacious as water fluoridation.

Conclusion

Since the dental profession truly believes in fluoridation as a method to prevent and control dental caries, all the means available should be used to improve the dental health of 100 million Americans in nonfluoridated areas by prevention. It is time for the dental profession to conduct a debate on the progress and shortcomings of CWF. The question of salt fluoridation, as an adjunct to CWF, must be squarely faced. There is more than a little evidence that CWF has reached its maximum saturation level, whether for economic or political reasons, and is now losing ground. Moreover, the backlash against CWF must be recognized and not ignored. The American Dental Association and the American Academy of Pediatric Dentistry should be able to take a position on this matter. A reasonable position can be taken that CWF is better for large communities and salt fluoridation is better for small towns and children on well water. This position can be supported by the fact that both methods are time-tested and equally effective as resolved by the WHO. Let's end the disparity in children's dental health due to only one kind of fluoridation. ■

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Access to Dental Care Depends on Appreciation of Demographics and Economics

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Abstract

The evolving demographics and economics of dental practice require consideration as the profession plans for future changes in the dental workforce, the makeup of the population and ongoing access to care crisis. This paper is a sampling of U.S. Census Bureau reports on demographics and an appraisal of *JADA* and *ADA News* statements regarding the economics of dental practice, as well as a review of historical developments of the profession's perceptions of dental education and government support for dental care. The trends in economics and population-based changes affecting U.S. dental practice indicate a general downturn in practice busyness, stagnation of expenditures for dental services, and a continuing increase in the proportion in minorities throughout the country and the limited ability to make changes in dental

economics without altering some long-held views on the delivery of dental services. Customary populations which provided the bulwark of dental practices are being replaced by minorities. The economics of dental practices will be dependent upon (a) developing cultural and structural competence in the economics of the evolving shift in population demographics, (b) implementing changes in the economics of dental education and expansion of delivery models, (c) prioritizing dental services for the most vulnerable segments of our population, particularly those with disabilities, and (d) enhancing lobbying efforts to increase student debt forgiveness programs and emphasizing the limitations of government support for dental services.

Yogi Berra (and others) observed that “the future ain’t what it used to be!” In the past decades, there has been emphasis on cultural competency in medical and dental education. This competency is defined as education aimed at identifying multicultural views on health, disability, and the marginalization of patients by race, ethnicity, social class, religion, sexual orientation, and other differences (Metzl & Hansen, 2014). Structural competency is defined as teaching health professionals about inequalities in health care in terms of the social conditions and institutions that constrain healthcare resources (Metzl, 2010). These definitions of what constitutes health and disability are essential for the trainee to appreciate needs of the changing population.

In April 2013, the *ADA News* reported that Americans are not spending any more for dental care than they were five years ago. After decades of steady growth, national dental expenditures began to slow in the 2000s, years before the economy soured. Once the Great Recession hit in 2008, national dental expenditures leveled off and have remained so (Soderlund, 2013).

The Features Section of the August 2015 issue of *JADA* reported on the numerous analyses from the ADA Health Policy Institute which demonstrated that the percent of dentists who report they are not busy enough and can see more patients has risen steadily for approximately a decade. Waiting times for appointments decreased correspondingly, dentists earnings are stagnating, and those dentists who accept Medicaid tend to be busier (Vujicic, 2015).

As the general economy of the nation continues to improve, there undoubtedly will be increasing use of oral health services. The need is to expand the delivery of care to underserved populations, including the poor, individuals with disabilities, minorities, and new immigrant populations for whom oral health services may not be a priority (Waldman & Perlman, 2015).

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TABLE 1. Distribution of U.S. civilian noninstitutionalized populations by race/ethnicity, 2014.

White alone	77.4%
Black alone	13.2
Asian alone	5.4
American Indian & Alaska Native alone	1.2
Native Hawaiian and Other Pacific Islander alone	0.2
Two or more races	2.5
Hispanic or Latino (may be of any race)	17.4

Source: Census Bureau. *QuickFacts United States*.

Relying solely on emphasizing efforts to increase the use of services by the traditional consumers of oral health care has limitations.

Part I: The Present

We are experiencing fundamental changes in the U.S. population. “The term ‘minority,’ at least as used to describe racial and ethnic groups in the United States, may need to be retired or rethought soon. By the end of this decade, according to Census Bureau projections, no single racial or ethnic group will constitute a majority of children under 18. And in about three decades, no single group will constitute a majority of the country as a whole” (Cooper, 2012).

The Census Bureau reported that in 2014, almost one-quarter (22.6%) of noninstitutionalized civilian residents are members of a minority racial population. In addition 17.4% of residents who identified themselves as

Hispanic ethnicity may be of any race. (See Table 1) The Hispanic population is projected to “...more than double, from 53.3 million in 2012 to 128.8 million in 2060...By the end of the period, nearly one in three U.S. residents would be Hispanic, up from about one in six today”.¹

The Census Bureau reported that in mid-2014, non-Hispanic whites are less than a majority in four states (California, Texas, New Mexico, and Hawaii) and the District of Columbia. Among the noninstitutionalized civilian population:

- Nationally, White alone non-Hispanic residents constitute 62% of the population, ranging from 23% in Hawaii to 94% in Maine. (Table 2)
- Nationally, Hispanic residents constitute 17.4% of the population, ranging from 1.4% in West Virginia to 38.7% in Texas. (Table 2)
- Nationally, Black alone residents constitute 13% of the population, ranging from 0.6% in Montana to 49% in the District of Columbia. (Table 2)

At the county level in 2014, the PEW Research Center, using Census Bureau data, reported that the “share of counties where Whites are a minority has doubled since 1980... 364 counties, independent cities, and other county-level equivalents (11.6% of the total) did not have non-Hispanic White majorities—the most in modern history...94 counties had Hispanic majorities, 93 counties had Black majorities, 25 counties had American Indian/American Native majorities, and 151 had no single racial/ethnic majority”²

Long-term customary populations which provided the bulwark for many successful dental practices are being replaced by the minority populations, particularly the Hispanic population.

TABLE 2. Lowest and highest proportion of White alone—non-Hispanic, Hispanic, and Black alone populations by state, 2014.

United States

White alone—non-Hispanic
62.1%

Hispanic
17.4%

Black alone
13.2%

Lowest proportion

Hawaii	22.9	West Virginia	1.4	Montana	0.6
Dist. of Columbia	35.7	Maine	1.5	Idaho	0.7
California	38.3	Vermont	1.7	Vermont	1.0
New Mexico	38.7	Mississippi	2.9	Wyoming	1.1
Texas	43.4	North Dakota	3.1	Utah	1.1
Nevada	51.3	New Hampshire	3.2	Maine	1.2
Maryland	52.4	Kentucky	3.3	New Hampshire	1.3
Georgia	54.2	Ohio	3.4	South Dakota	1.7
Florida	55.6	South Dakota	3.5	Oregon	1.8
Arizona	56.1	Missouri	3.9	North Dakota	2.0
New York	56.3	Alabama	4.1	New Mexico	2.0

Highest proportion

South Dakota	83.2	Connecticut	15.0	Virginia	19.2
Wyoming	84.0	Illinois	16.7	North Carolina	21.7
Kentucky	85.4	New York	18.5	Delaware	21.7
Montana	86.7	New Jersey	19.3	Alabama	26.6
North Dakota	86.8	Colorado	21.1	South Carolina	27.3
Iowa	87.1	Florida	24.0	Maryland	29.7
New Hampshire	91.2	Nevada	27.8	Georgia	31.3
West Virginia	92.6	Arizona	30.5	Louisiana	32.3
Vermont	93.2	California	38.6	Mississippi	37.8
Maine	93.7	Texas	38.7	Dist. of Columbia	48.8

Source: Census Bureau, Factfinder—Population percentage distribution.

This high level of educational debt, coupled with stagnant income for all dentists and the high price of dental practices for sale can jeopardize a new dentist's ability to choose their preferred career path. Debt reductions or restructuring of dental practice patterns appear to be essential.

Decades of studies based on race/ethnicity, income, residency locations, and insurance have emphasized the disparities in the delivery of dental care to the general public. For example, half of youngsters and teenagers (5-17 years) were reported as not having expenditures for dental services in 2010, followed by two-thirds of younger adults (18-44 years) and more than half of the population 45 years and older.³

Despite these general population developments, the demographic profile of the dental profession has experienced limited change. Specifically, compared to the general population, Asian students are over-represented among dental school graduates and other minorities are underrepresented during the past decade.⁴ The economic strength of the profession may well be predicated upon the responses to these developments and other events. Most important, in mid-April 2013, the lead headline of the *ADA News* announced that “Baby boomers boost utilization: older patients show raise in dental expenditures” (Soderlund, 2013). The rising proportion of those over 65 years (projected to increase from 48 million in 2015 to 92 million in 2060) could significantly increase dental expenditures, “...buoying up the dental economy for years to come” (Soderlund, 2013).

Unfortunately, waiting decades for the number of seniors to almost double and boost the economics of dentistry is not a viable option for current practitioners. Similarly, relying solely on emphasizing efforts to

increase the use of services by the traditional consumers of oral health care has limitations.

No review of population changes would be complete without reference to individuals with disabilities. In 2010, approximately 56.7 million people living in the United States (18.7% of the population) had some kind of disability. About 12.6%, or 38.3 million people, had a severe disability. The overall number has continued to increase and will continue to do so much further as the expanding aging population reaches into its 70s, 80s, 90s and beyond.⁵ In 2010, almost 29% of individuals with disabilities (many of whom are dependent upon the Medicaid program for care) did not obtain dental services because of limitations in the reimbursement for services and lack of adult Medicaid dental coverage in many states.⁶ As a result, Medicaid dentists are “...so hard to find”.⁷

Part II: The Past

More than 50 years ago, in the 1960s, the years shortly after the assassination of President Kennedy, actions were needed to bring the country together with some forms of legislation. These efforts included:

- Civil Right Act of 1964—Title VI prohibited public access discrimination, leading to desegregation. Title VII prohibited employment discrimination based on race, sex, national origin, or religion.
- Executive Order 11246 of 1965—Affirmative action requirements of government contractors and subcontractors.
- Voting Rights Act of 1965—Federal voting rights laws.

In 1965, during the period of a “national introspective review,” intensive congressional efforts were carried out to bring change to the health care system, which eventually produced Title XVIII (Medicare — health insurance for the aged and disabled) and Title XIX (Medicaid — grants to states for medical assistance programs) of the Social Security Act. Positions taken by the dental profession during that period have had long-term impact on the delivery of dental services.

In early 1965 the American Dental Association joined the American Medical Association in calling for expansion and modification of the then existing Kerr-Mills legislation (KML) rather than the proposals for Medicare which carried no income limitations (Waldman 1972). KML provided health benefits to medically indigent persons 65 years or over, not receiving old age assistance cash payments, but whose incomes was insufficient to meet the costs of necessary medical services. The modification and extension of the KML served as the format for the Medicaid legislation (Moore & Smith 2005-6). Unfortunately, the Medicaid legislation mandates dental services for children in low-income families, but stipulated that dental services for low income adults is an elective service. In times of economic difficulties, states have limited or eliminated Medicaid dental care for adults.

Almost 50 years later, the Affordable Care Act provides increased dental services for children in those states that have elected to increase services under the expansion of the Medicaid program. In March 1965, the ADA expressed its opposition to any legislation that would provide health care under the Social Security system.

While the AMA acceded to the Medicare legislation, the ADA’s opposition precluded inclusion of extensive dental services coverage for the older population which will number 56 million in 2020 and 73 million in 2030 (Ortman et al, 2014). In 1967, the ADA House of Delegates called for an amendment of the Title XVIII of the Social Security Act to authorize payments of hospital costs for the beneficiaries who require hospitalization for dental condition or application.

Since the mid-1960s and the 1970s, there has been “...far more apprehension over the general philosophic orientation of the (dental) educational environment and the attitudes of dental educators themselves” (Waldman, 1977). For example:

- A former editor of *JACD* commented that, “...there are ‘progressive’ dental educators who appear to regard clinical dentistry as more craftsmanship than scholarship ...and that ‘creeping socialism’ in dental education... has resulted in a drastic swing away from emphasis on clinical training” (Butts, 1975).

- Similarly, the president of the New York Academy of Dentistry mooted at the time, “Do we feel that clinical exposure should be sacrificed for didactic courses such as community dentistry and nutrition?” (Neurohr, 1976)
- I noted then that “it is difficult to document in the 1972 recorded proceedings of the ADA whether the general atmosphere of concern for the influence of ‘progressive dental educators’ was a factor in the decision (for a formal) review of dental education programs... Nevertheless, speakers alluded to the ‘socialist tendencies of the administrative officials of some dental schools’” (Waldman, 1977).

Times have changed. The Commission on Dental Accreditation (CODA) Standards 2-15 and 2-16 for the category Behavioral Sciences now states:

- Standard 2-15: Graduates must be competent in the application of the fundamental principles of behavioral sciences as they pertain to patient-centered approaches for promoting, improving and maintaining oral health.

We are experiencing fundamental changes in the U.S. population. “The term ‘minority,’ at least as used to describe racial and ethnic groups in the United States, may need to be retired or rethought soon.

- Standard 2-16: Graduates must be competent in managing a diverse patient population and have the interpersonal and communications skills to function successfully in a multicultural work environment.⁸

In 1996, CODA removed all references for clinical competency in the management of persons with developmental disabilities from the predoctoral dental education standards. Despite an intensive effort led by the Special Olympics and the endorsement of the ADA House of Delegates, CODA was reluctant to reinstitute the standard, citing economics and lack of trained faculty and available curricular time. But shortly afterwards, the Commission established a new standard (implemented in 2006) for all U.S. dental and dental hygiene schools to prepare students for the care of individuals with special needs.”

- Standard 2-24: Graduates must be competent in assessing the treatment needs of patients with special needs.

As of 2008, many dental schools have gone beyond this standard and have predoctoral students actively involved in treating patients with special needs (Clemetson et al, 2012).

Part III: The Future

According to the American Dental Education Association (ADEA), the average debt per graduating senior in 2014 was \$247,227 (\$216,437 for graduates from public schools; \$289,897 for graduates from private schools).⁹

Now add an opinion expressed in *Dentistry Today* that, “While much of the economy has recovered since the Great Recession, the earnings of general practitioners (GPs) have not improved, according to the ADA. In fact, 2014’s average earnings of \$174,780 for all GPs follows 2013’s average of \$183,885 and comes at the end of a nearly decade long decline since 2005’s inflation-adjusted peak of \$219,378”.¹⁰ This high level of educational debt, coupled with stagnant income for all dentists and the high price of dental practices for sale can jeopardize a new dentist’s ability to choose his or her preferred career path. Debt reductions or restructuring of dental practice patterns appear to be essential, whether by practice arrangements in underserved areas or for specific underserved populations.

There are currently approximately 4,900 Dental Health Professional Shortage Areas (HPSA) in the country. These are areas where there are 5,000 or more people per dentist. It would take approximately 7,300 additional dentists to eliminate the current dental HPSA designations. Medically underserved populations (MUP) are areas or populations that have too few primary care providers, high infant mortality, high poverty, or high older adult population. MUPs may include groups of persons within an area of residence who face economic, cultural, or linguistic barriers to health care.¹¹

The need is to expand the definition of eligible populations in MUPs to include individuals with intellectual disabilities. At the 2014 annual ADA meeting, Resolution 96H-2014 was approved: “Resolved, that the American Dental Association support a simplified process across appropriate governmental agencies to designate individuals with intellectual disabilities as a medically underserved

In the past practitioners waited in their offices to meet new patients, comfortable in the knowledge that the new patients would be members of the “usual” families that had lived in their communities for generations.

population, and be it further Resolved, that the ADA seek to collaborate with the American Medical Association and the American Academy of Developmental Medicine and Dentistry to promote this process to appropriate governmental agencies.”

The increasing number and diversity of dental school graduates potentially could be a factor in increasing services for the underserved, if new graduates are attracted to communities in need of care. For example, in a study of New York State dentists between 2006 and 2013, (reflecting the increased total number of dentists in the state) there were dramatic increases in the number of dentists and dental hygienists in more than 80% of the state counties, including most upstate counties (other than New York City) despite the fact that many upstate counties lost population” (Waldman, 2014).

National health expenditures projections in 2016 by the Centers for Medicare and Medicaid Services indicate that:

- For dental services: 36.4% will be paid out-of-pocket, 11.3% from government sources, and 51.8% from private insurance.
- For physician services: 7.3% will be paid out-of-pocket, 37.6% from government sources and 46.5% from private insurance.
- For hospital services: 2.8% will be paid out-of-pocket, 51.8% from government sources and 36.7% from private insurance.¹²

If change is to occur, then the dramatic differences in the sources of payment need to be emphasized by the profession and its congressional lobbyists (Waldman & Perlman, 2015a).

Summary

Two headlines from the ADA tell the story: “Health policy institute: Dentists’ earnings remaining stagnant”¹³ and “Since the early 2000s, dental spending has flattened but the number of dentists has increased resulting in stagnant dentist earnings (Soderlund, 2016).

In the past, before advertisement and media changed the world of health services, practitioners waited in their offices to meet new patients, comfortable in the knowledge that the new patients would be members of the “usual” families that had lived in their communities for generations.

If Yogi Berra was right, and “the future ain’t what it used to be,” then the practice of the health professions must function in terms of the evolving developments. The words of Jack Welch may be foresighted, indeed: “Change before you have to.” ■

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Submitting Manuscripts for Potential Publication in JACD

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Authors are strongly urged to review several recent volumes of *JACD*. These can be found on the ACD web page under “publications.” In conducting this review, authors should pay particular attention to the type of paper we focus on. For example, we normally do not publish clinical case reports or articles that describe dental techniques. The communication policy of the College is to “identify and place before the Fellows, the profession, and other parties of interest those issues that affect dentistry and oral health.

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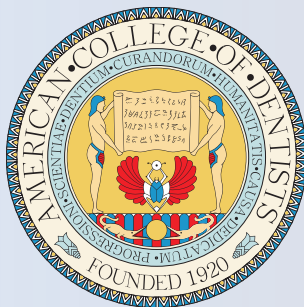
A “desk review” is normally provided within one week of receiving a manuscript to determine whether it suits the general content and quality criteria for publication. Papers that hold potential are often sent directly for peer review. Usually there are six anonymous reviewers, representing subject matter experts, boards of the College, and typical readers. In certain cases, a manuscript will be returned to the authors with suggestions for improvements and directions about conformity with the style of work published in this journal. The peer-review process typically takes four to five weeks.

Authors whose submissions are peer-reviewed receive feedback from this process. A copy of the guidelines used by reviewers is found on the ACD website under “How to Review a Manuscript for the *Journal of the American College of Dentists*.”

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Letters from readers concerning any material appearing in this journal are welcome at chambers@pacific.edu. They should be no longer than 500 words and will not be considered after other letters have already been published on the same topic. [The editor reserves the right to refer submitted letters to the editorial board for review.]

This journal has a regular section devoted to papers in ethical and professional aspects of dentistry. Manuscripts with this focus may be sent directly to Dr. Bruce Peltier, the editor of the Issues in Dental Ethics section of *JACD*, at bpeltier@pacific.edu. If it is not clear whether a manuscript best fits the criteria of Issues in Dental Ethics, it should be sent to Dr. Chambers at the e-mail address given above and a determination will be made.



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