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Teledentistry

Improving Oral Health Using Telehealth-Connected Teams



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Introduction

There is growing interest in the use of telehealth technologies, driven by increased recognition of its potential to improve access to health care and improve health outcomes. Advances in technology and information systems have paralleled increased awareness of the need to change the way health care is delivered to improve health care outcomes, while reducing health care system costs.

The goal of this report is to provide a deeper understanding of the policy environment needed and methods for using telehealth to better meet the needs of underserved populations. The report reviews changes taking place in the general health and oral health care systems as well as national recommendations that have been proposed to address these changes. These include developing systems to use telehealth technologies in the delivery of dental services. The report also reviews telehealth modalities and oral health systems that use telehealth technologies. It describes the legal and regulatory environment needed to create and use telehealth-connected teams, equipment and software requirements, and considerations for incorporating telehealth in dental practices and community-based oral health care systems. Finally, it describes the concept of disruptive innovation and the role that telehealth technologies will play in the coming decades in the delivery of oral health services.

The General and Oral Health Care Systems

The general health care system in the United States is undergoing tremendous change. This is driven by increased recognition that the current system that spends too much money and achieves too little. In the U.S., healthcare spending is approaching 20% of the Gross Domestic Product (GDP) as illustrated in Figure 1.¹ This is significantly higher than in other developed countries.

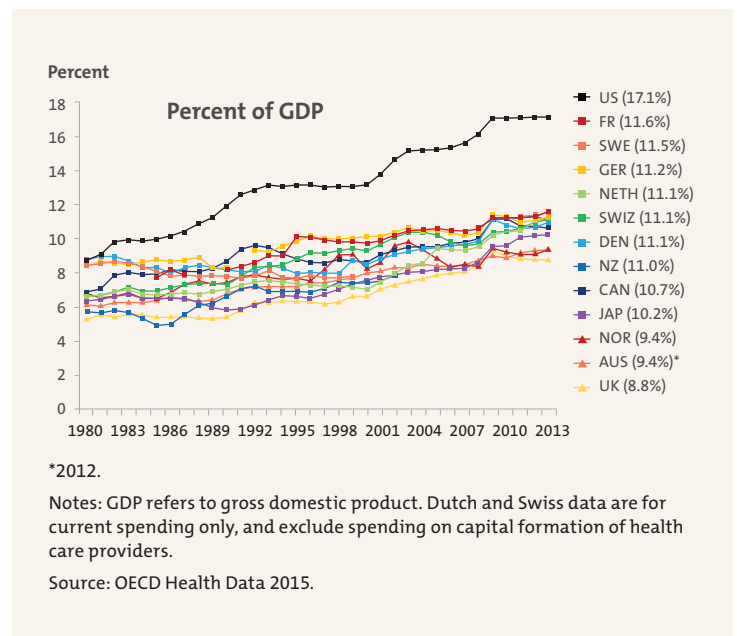


Figure 1: U.S. Health Care Spending as a Percent of GDP¹

There is ample evidence that the U.S. gets poor results for all this spending compared to other developed countries which spend less than half that the proportion of their GDP on healthcare. Poor results are measured in many ways including significant health disparities in the U.S. population.^{2,3} There is also growing recognition that the same factors apply in the oral health industry.

Currently, the majority of the U.S. population does not receive dental care.⁴ Many people face significant barriers to obtaining dental care in dental offices and clinics including the cost of dental care, geographic distribution of dental offices and clinics, and linguistic and cultural barriers. As a result, the dental care industry, as currently constituted, is serving primarily the wealthiest people in the country who are, in general, also the healthiest people in the country.⁵ The consequences of these disparities in access to care includes significant disparities in oral health among many groups, especially low income groups, people in racial and ethnic minorities, and people with complex medical problems and disabilities.^{6,7,8,9}

Visits to dental offices began to drop in 2003 and have been declining ever since.¹⁰ In addition, dentist's income, which had been rising steadily until 1999, remained flat through 2005 and have now been on a steady ten year decline.¹¹ The American Dental Association has referred to these trends as "A New Normal," meaning that these trends are likely to continue for the foreseeable future and it is unlikely that the dental industry will return to the situation that was present in the 1980s and 1990s, when there was rapid growth in demand for dental care and increasing dental incomes.¹²

As a result of the increasing awareness of the money the U.S. spends on health care and the poor results obtained from this spending, U.S. policy makers have adopted the Triple Aim as our national goal for health care.¹³ This phrase, coined by the Institute for Healthcare Improvement,

refers to the following national health care goals, which also apply in oral health:

- Improve the experience of care
- Improve the health of populations
- Reduce per capita costs of health care

Specific recommendations for improvement in oral health have come from many prestigious national panels, including the U.S. Surgeon General and the Institute of Medicine.^{14,15} It has become clear that the path to improving oral health of the population involves emphasis on significantly different activities than have been utilized in the traditional oral healthcare system. The 2011 Institute of Medicine (IOM) report on *Improving Access to Oral Health Care for Vulnerable and Underserved Populations* described a number of strategies to address problems with access and oral health. These include:

- Changing the emphasis in the dental care system from acute surgical care to prevention and chronic disease management,
- Bringing dental care to community sites where underserved populations receive educational, social service, and general health services,
- Engaging community health workers and patient navigation systems, as well as integrating oral health into existing non-dental organizations and systems,
- Using telehealth systems to connect providers working in geographically distributed teams,

- Expanding the effectiveness of the oral health workforce and ensuring that members of the dental team are able to provide services to the highest level of their training and experience,
- Driving change and accountability using quality metrics and outcomes assessment, and
- Using payment incentives to focus provider activities on those activities most likely to improve the health of the population at the lowest cost possible.

As our general health care system, and the oral health care system in particular, begins to focus on bringing healthcare services to those individuals and groups who have been traditionally underserved, the use of telehealth technologies has become an important and viable tool. In fact, delivery of oral health services using telehealth technologies can be described as an emerging “disruptive innovation” in the oral health industry.¹⁶

This report focuses on strategies involving using telehealth technologies and systems to:

- bring dental care to community sites where underserved populations receive educational, social, and general health services
- emphasize prevention and early intervention activities,
- build geographically distributed teams, and
- link services provided in the community with dental offices and clinics where more advanced services can be provided.

What is Telehealth?

The National Telehealth Policy Resource Center defines telehealth as “a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies.”¹⁷ Telehealth

encompasses a broad variety of technologies and tactics to deliver virtual medical, health, behavioral, and education services. Telehealth is not a specific service, but a collection of means to enhance care and education delivery. It is primarily a communications tool.

The term “telemedicine” has been used when referring to traditional clinical medicine diagnosis and monitoring that is delivered by technology. The newer term “telehealth” is now more commonly used as it describes the wide range of diagnosis and management, education, and other related fields of health care. These include, but are not at all limited to:

- Dentistry
- Counseling
- Primary care
- Physical and occupational therapy
- Home health
- Chronic disease monitoring and management
- Disaster management
- Consumer and professional education

In 2015 the American Dental Association (ADA) House of Delegates adopted a resolution that defined and recognized the value of teledentistry in dental practice.¹⁸ The definition in that policy statement is “Teledentistry refers to the use of telehealth systems and methodologies in dentistry. Telehealth refers to a broad variety of technologies and tactics to deliver virtual medical, health, and education services. Telehealth is not a specific service, but a collection of means to enhance care and education delivery.”

An example of a legal definition of telehealth is found in California law.¹⁹ It is defined there as “the mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient is at the originating site and the health care provider is at a distant site. Telehealth facilitates patient self-management and caregiver support for patients and includes synchronous interactions and asynchronous store-and-forward transfers.”

The term “Telehealth” is generally preferred when talking about the use of these technologies. However, there are times when it is appropriate to use terms that refer to specific uses, such as “teledermatology”, “teleophthamology”, and “teledentistry.”

A critical point to emphasize is that telehealth refers to communication tools and systems that facilitate the delivery of health care. Telehealth, or teledentistry, are NOT health care services.

Telehealth Modalities

Telehealth technologies and systems can be broadly divided into several categories as follows:

- **Live Video (synchronous)**
Sometimes referred to as “real time” or “videoconferencing,” synchronous interactions which are useful when a real time conversation is needed between a health care provider and a patient or between health care providers. In general, live video is used for synchronous interactions, but real time interactions can also take place using some of the other modalities described below.
- **Store-And-Forward (asynchronous)**
This category refers to interactions that do not take place in “real time.” A common use of asynchronous interactions is when a health care provider reviews health information or records which have previously been gathered by another professional or allied professional at an earlier time and at a different place than where the records are reviewed. The term “store-and-forward,” although commonly used today, is an older term that originated when records were captured in one location and then sent (forwarded) to another location. Now records can be captured directly to “the cloud” (internet-based servers) and accessed by individuals in multiple locations, eliminating the step of “forwarding” the records. Store-And-Forward telehealth is in use in many aspects of health care such as teledermatology, teleophthamology, and teledentistry.

- Remote Patient Monitoring**
 Remote patient monitoring refers to using electronic means to gather information about a patient's health, which are reviewed by a health care provider in a location separate from where the patient is. This can be done synchronously or asynchronously. Examples include the Holter monitor which measure EKG readings over a 24 hour period and emerging systems to measure the pH of patient's saliva over a period of time for review by the patient's dentist.
- Mobile Health (mHealth)**
 Mobile health includes information sharing, education, and patient monitoring systems supported by mobile communication devices such as cell phones, tablets, and computers. These mobile devices can support interactions that overlap with the categories described above.

Oral Health Delivery Systems Using Telehealth Technologies

Telehealth technologies can be used to facilitate or enhance the delivery of oral health services in a variety of ways. These can range from electronic sharing of digital patient care records for the purpose of consultation between healthcare professionals, i.e. dentist-to-dentist or dentist-to-physician interactions, to full comprehensive care systems using geographically distributed, telehealth-connected teams.

In New York, a program which has been operating for a number of years uses transmitted videos to determine the need for general anesthesia in children from migrant farmworker families and real time videoconferencing to perform preoperative visits for families of children scheduled for dental care under general anesthesia. These interventions save the families a long drive for what can turn out to be a short preoperative consultation.²⁰

mHealth uses in oral health includes information and data sharing between patients and providers. An example, developed at the Arizona School of Dental and Oral Health are two mobile apps called Text2Floss, which pushes preventive procedure reminders to patients and PH2OH, which helps patients monitor the pH of their saliva and sends that information to their dentists.^{21,22}

Some providers use real time video conferencing, in some cases enhanced by the use of real-time transmission of intraoral videos using intraoral cameras, for dentist-to-dentist consultation about dental procedures such as endodontics, or evaluation of oral pathology.

Many oral health care providers have used store-and-forward transmission of dental records to facilitate oral health screenings or treatment.

In Alaska, the Dental Health Aid Therapist (DHAT) system use a combination of real time (including phone calls) and store-and-forward technologies for DHATs to communicate with their supervising dentist.²³

The next section of this report describes a comprehensive care system that uses telehealth connected teams and store-and-forward record review for provision of full-service dental care. It is presented here as an example of using telehealth technologies to facilitate a comprehensive community-based system of care that links community delivered early intervention and prevention services with more advanced services delivered in dental offices and clinics.

The Virtual Dental Home System of Care

The Virtual Dental Home System of Care (VDH) is a community-based oral health delivery system, developed in California, in which people receive dental diagnostic, preventive, and early intervention services in community settings.²⁴

The VDH uses telehealth technology to link dental hygienists and expanded function dental assistants in the community with dentists in dental offices and clinics, facilitating access to the full dental team and comprehensive dental care. Community-based allied dental personnel (dental hygienists and extended function dental assistants) collect dental records and provide preventive care for patients in community settings, such as schools, Head Start sites, low-income community centers and nursing homes. The community-based clinical team provides that information through a secure web-based cloud storage system to a dentist at a clinic or dental office who establishes a diagnosis and

creates a dental treatment plan. In addition to preventive procedures, the hygienist or assistant, if directed to do so by the dentist, may provide a type of small protective filling called an “interim therapeutic restoration” (ITR), stabilizing the tooth until the dentist determines that further treatment is required. Patients who require more complex treatment that only a dentist can provide are referred and receive assistance scheduling a dental appointment.

The VDH reaches people where they live, work or receive educational or social services, significantly reducing the need to travel to receive dental care. In a six-year demonstration project in California, directed by the Pacific Center for Special Care at the University of the Pacific, Arthur A. Dugoni School of Dentistry (Pacific), approximately two-thirds of the children and half the adults with complex health conditions seen in a VDH system were able to receive all the care they needed at the community site. This is care they most likely would not have received otherwise. Most of these children and adults typically receive no care until they have advanced disease, and pain, and infection.

There are many benefits to the VDH system of care. It links community-based diagnostic, preventive, and early intervention services with dental offices and clinics, reaching people early and forming a complete system of care. For children, providing access to preventive services early in their lives reduces the incidence of dental disease and provides a lifetime of benefits. When children are free from active dental disease, they miss fewer

days of schools and are better able to learn.^{25,26,27} They also enjoy the benefits of higher-quality nutrition and experience improved self-esteem and overall health. Elders, especially those who live in a residential facility, benefit from receiving dental services that will keep their mouths clean and pain free. In instances where more complex care is required and a trip to the dental office is scheduled, the VDH system minimizes the number of visits required, as the patients' needs have already been assessed and the dentist is prepared to provide the required treatment.

When considering improving oral health for children, the VDH system uses telehealth-connected teams to produce several advantages over traditional school-based dental programs. Some of these are:

- **Continuous presence.** Having oral health personnel in the community site, such as a school, integrates oral health into the community organizations where care is delivered and elevates the awareness and attention to oral health issues for everyone on the staff and administration of the community site. This has important secondary benefits for patient and parent education and counseling.
- **Oral health verified on-site.** The majority of people are kept and verified healthy on-site. Having a dentist review dental records

collected on site via telehealth allows the dentist to make a determination of whether the individual has oral health needs that can be addressed by the allied dental personnel on site, whether they need to be referred and helped to make an appointment in a dental office or clinic, or whether they are in fact healthy and only need ongoing recall and prevention visits in the community site. In other systems where the dentist is not on site, allied professionals on-site are obligated to refer everyone seen to a dental office for a dental examination. This is a costly endeavor and dilutes the effectiveness of referral and case management systems from those who actually need care in the dental office or clinic.

- **Dentists integrated into the care system.** The use of telehealth technologies allows the geographically distributed telehealth connected team to provide full dental services even though members of the team are in different locations.

The cost of neglected dental disease is substantial to individuals and to society. By using telehealth technologies to bring preventive and early intervention dental care to these vulnerable populations, the VDH model can provide long-term savings by avoiding costly procedures, emergency room visits and even hospitalizations associated with advanced dental disease.

The Legal and Regulatory Environment

There are a number of legal and regulatory issues to consider when designing or implementing a telehealth-connected system of care. These issues are briefly described here.

The Ability to Use Telehealth to Deliver Oral Health Care

The ability to develop and use telehealth technologies in oral health care depends on the legal and regulatory environment in the state where the system is to be deployed. As documented by the National Telehealth Policy Center, states vary considerably in their laws and policies on the use of telehealth and payment for telehealth facilitated services.²⁸ For example, that report indicated that, while 48 states have a definition in law, some use the term “telemedicine” (leaving out dental use), and some “telehealth,” a term that encompasses multiple health services. Two states, Rhode Island and New Jersey, still lack a legal definition for both terms.

Forty-seven states have some form of reimbursement for telehealth in their public health coverage program (i.e. Medicaid), but only a few specify that these payment mechanisms apply to dental care. The most predominantly reimbursed form of telehealth is live video. However, what and how it is reimbursed varies widely and, again dental services are rarely included.

States also vary in their requirements for providing informed consent for the use of telehealth technologies. Twenty-nine states include some sort of informed consent requirement in their statutes, administrative codes, and/or Medicaid policies. These vary from a requirement for a documented verbal consent, to rules requiring written consent, and in some states rules prohibiting the use of telehealth technologies unless the patient has been seen in a face-to-face visit first.

Most states require the health care provider to be licensed in the state where the patient receiving healthcare services is located. Eleven states allow for an Interstate Commission to use an expedited licensure process for licensed physicians to apply for licenses in other states. There are no states that allow dental services to be provided by a dental professional not licensed in the state where the patient is receiving services.

While a number of states, as described above, require payment for healthcare services performed using telehealth technologies, these payment mandates are typically restricted to public payment programs such as Medicaid. There are only a few states that require private payers to pay for healthcare services performed using telehealth technologies.

Store-and-forward services are only defined and reimbursed by a handful of state Medicaid Programs. California, in 2014 passed the first state law that explicitly stated that dental services provided using store-and-forward

telehealth technologies must be reimbursed by the state Medicaid program.²⁹ Since that time similar legislation has been passed in Colorado and Minnesota. A number of other states are considering similar legislation.

In a state where the ability to use telehealth technologies to deliver oral health care, and to be paid when using real-time or store-and-forward telehealth technologies is not defined or clear, the regulatory environment must be addressed before systems using these technologies can be deployed. Fortunately, with the American Dental Association now having a policy on the use of store-and-forward teledentistry, and a number of states passing laws and adopting regulations based on California's landmark law, it is becoming easier for advocacy groups, decision makers, and other stakeholders, to use the experience in those leading states to adopt similar policies.

A principle to be followed in creating a legal environment that supports the use of telehealth is to consider telehealth technologies as communication tools. This tool is distinct from the health services that are being provided. With this in mind, the health care provider should be permitted to perform any procedure they are licensed to perform and make decisions about which tools to use, including telehealth communication tools. An extension of this principle is the suggestion to use the following wording when establishing rules for payment of services performed using telehealth technologies: "face-to-face contact between a health care provider and a patient is not required for services

performed by real time or store-and-forward teledentistry."

Scope of Practice Considerations

Another consideration in the deployment of telehealth-facilitated oral health systems is the scope of practice laws in each state. This is particularly an issue when considering the use of allied dental personnel in community sites to collect information or perform procedures in locations where a dentist is not present. In addition, some state laws or regulations may also impact the ability to perform dentist-to-dentist consultations using telehealth technologies.

In general, as stated in the ADA Policy on teledentistry, "the extent of the supervision of allied dental personnel should conform to the applicable dental practice act in the state where the patient receives services and where the dentist is licensed." Since most states do not have specific laws and regulations that define the provision of dental services using telehealth technologies, guidance or regulations would need to be developed in this area.

There are several principles to be followed in creating a scope of practice environment that supports the use of telehealth technologies and allows allied personnel to function using telehealth interactions. The Institute of Medicine (IOM) in its 2011 report on *Improving Access to Oral Health Care for Vulnerable and Underserved Populations* had a number of recommendations for improving oral health.³⁰ Among them was

a recommendation to maximize access to oral health care by having state dental practice acts allow allied dental professionals to practice to the full extent of their education and training, allow allied dental professionals to work in a variety of settings under evidence-supported supervision levels, and allow technology-supported remote collaboration and supervision.

In order to maximize the potential for telehealth systems to improve oral health, it useful allow allied oral health personnel, with necessary training and working under telehealth or general supervision or predetermined protocols, to collect diagnostic records including images (radiographic and photographic), charting, and other components of a complete electronic dental record. It is also useful to allow allied oral health personnel, with necessary training and working under telehealth or general supervision or predetermined protocols, to perform preventive and early intervention procedures in community sites.

Liability Coverage Considerations

Some oral health care providers are concerned about liability coverage policies providing coverage when they use telehealth technologies. However, for example, a survey of liability coverage carriers in California provided uniform assurance that as long as the provider was performing procedures that they were allowed to perform under their license, their coverage would be in effect regardless of whether they were using telehealth technologies or not.

HIPAA Considerations

Questions can arise about compliance with the Health Insurance Portability and Accountability Act (HIPAA) when using telehealth technologies to provide health care services. The same considerations apply about patient privacy and data security that apply in a single office environment. Patient's personal health information must not be disclosed without permission and data security must be ensured. Fortunately, there are multiple software and data systems that are adequate to meet these requirements.

As a general principle, patient data should not be transmitted over email unless steps are taken to encrypt the information. Another consideration that might be different in a telehealth environment would be the use of laptop computers or other mobile devices. The most secure systems are those where the data is stored only on a secure server and accessed, but not stored, on the mobile device. If patient data are stored on a mobile device, a best practice would be to encrypt the data so it cannot be accessed should the device be lost or stolen.

Considerations in Using Mobile or Portable Delivery Systems

A number of states have laws or regulations related to the use of portable or mobile health care delivery systems. In general, mobile delivery systems describe the use of vehicles that contain a dental operatory that are driven to a community

location. In general, portable equipment describes equipment that can be transported in a car and carried into and set up in a community location. While not specifically related to the use of telehealth technologies, they can impact delivery systems in which telehealth technologies are used. Some common elements in these laws or regulations are the requirement to make patient records available on request, to have provisions to respond to requests for emergency or follow-up care, and to use infection control procedures equivalent to those used in an office environment. There are many resources available that provide guidance on the use of mobile or portable delivery systems. There is no reason why regulations concerning the use of mobile or portable delivery systems should impact the ability to use telehealth technologies. If a particular state has regulations that do restrict the ability to use telehealth technologies, those regulations should be modified to remove those restrictions.

Equipment and Software

Requirements for equipment and software to support the use of dental services performed using telehealth technologies vary depending on the specific services provided and the environment in which they are provided. For example, real time videoconferencing for dentist-to-dentist or dentist-to-patient consultations may be performed using simple video communications

devices. A record of the encounter can be made in a separate dental record system the same as it would be if the consultation took place in-person.

At the other end of the spectrum a system like the Virtual Dental Home system described above uses portable equipment and software to create a fully populated electronic dental record (EDR) system that is available to multiple providers at different locations. In this system the hardware technology requirements include:

- A portable x-ray source such as the Nomad Handheld X-Ray System™,
- A digital x-ray sensor,
- An intraoral camera and perhaps an extraoral camera for full face or full arch photographs.

The software EDR system also has requirements in a system like the Virtual Dental Home:

- It must be accessible to multiple providers who are in different locations. This works best with a system where the data is stored in a “cloud”-based server and access is provided to specific records based on log-in credentials.
- There needs to be the ability to capture and “upload” images from a community site and have them accessible to providers in other locations.
- As described above, it is best not to have identifiable patient information stored on mobile devices.

Integrating Telehealth Systems in Dental Practice

As with other aspects of telehealth, considerations for integrating telehealth systems in dental practices vary by the specific technology and use. For example, incorporating occasional real time video for dentist-to-dentist or dentist-to-patient consultation might only require making an appointment for this interaction within the normal practice schedule. At the other end of the spectrum of uses, a system that uses telehealth connected teams with allied dental personnel deployed in community sites like in the Virtual Dental Home system, may require more attention to design and protocols.

In a system where allied dental personnel are collecting diagnostic information or records, and a dentist is making diagnostic decisions based on that information or records, it is critical that the dentist know the allied personnel and that they be well calibrated to work together. In these situations, it is a “team sport.” As with any team sport, a well calibrated, tested and rehearsed team where the members know and trust each other to carry out their roles will perform better than one where this level of preparation has not occurred.

A way to think about using community-based telehealth-connected teams or the Virtual Dental Home system is to consider it as a different way to think about a dental practice. Think about it as one dental team where some members of the team are in the community collecting diagnostic records and delivering low-cost prevention and

early intervention care. Other members of the team are in the dental office or clinic performing more complicated procedures that require a dentist and the environment found in the full-service dental office. It’s all one team, able to care for a larger group of patients than previously possible, and connected together using the telehealth system.

For the system just described to function effectively, there needs to be detailed protocols for collection and review of information and records, referrals from the community to the office, procedures for making financial arrangements before people come in for an office appointment, and protocols for tracking patients and providing on-going care.

Integrating Dental Care in Community Locations and Organizations

As described earlier, the majority of people in the U.S. population do not take advantage of the current dental office and clinic based oral health care system. These are the individuals with the majority of untreated dental disease. Using telehealth-connected teams to expand dental care and dental services into community locations and integrating dental care in community organizations has the potential to reach many people not reached currently and the ability to use prevention and early intervention strategies to keep them from developing advanced disease. Realizing this potential in various states involves creating a supportive policy environment and

training oral health and other professionals in a delivery system that is different than what they have been prepared for in their professional training. Operationalizing the system involves engaging or developing the expertise to work with community organizations that have not had previous experiences hosting members of telehealth-connected oral health teams.

It is critical that administrators and staff of community organizations that are hosting telehealth-connected teams be fully engaged in, and actually a part of the care system. Their role is critical in activities such as making the program known, obtaining consent, arranging for space and scheduling treatment and education sessions. Their role is also critical in supporting behavior change to help people adopt good “daily mouth care” habits and “tooth healthy” diets. In fact, the role of administrators and staff is so critical that they should be considered as part of the team, not just hosts for the dental team.

Creating a functioning community team that includes oral health professionals and community organization administrators and staff requires careful attention to the cultural differences between oral health care systems and the general health, social service, or educational systems where the community care may take place. It requires respectful negotiations and careful delineation of roles and responsibilities as well as on-going monitoring of the system and adjustment based on input and feedback.

Teledentistry as a Disruptive Innovation

Clayton Christensen, Professor of Business Administration at the Harvard Business School, coined the term “Disruptive Innovation” in a series of books starting with *The Innovators Dilemma*, published in 2003.¹⁶

He describes disruptive innovation as “a process by which a product or service takes root initially in simple applications at the bottom of a market and then relentlessly moves up market, eventually displacing established competitors.” In his view disruptive innovation becomes possible because some companies [or industries] “tend to innovate faster than their customers’ needs evolve and end up producing products or services that are actually too sophisticated, too expensive, and too complicated for many customers in their market. Companies pursue these ‘sustaining 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, these companies have, in the past, achieved the greatest profitability.”

The description above perfectly describes the dental industry which has developed wonderful and sophisticated technologies and services that are too expensive and too difficult to access for most people in the country. As a result, and as described above, visits to dental offices and dentist’s incomes have been declining for over a

decade and the dental industry is now primarily serving the wealthiest, and also the healthiest, members of society.

Christensen goes on to say that companies or industries that pursue the path described above, which is the path that the dental industry has followed, “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.”

It is clear that the dental industry is now positioned for disruptive innovation. What it will look like is not certain, but several trends are emerging. Among these is the consolidation of practice models into larger groups and the growth in the use of teledentistry. The use of teledentistry will expand gradually due to the need for policy reform in most states. However, it is clear that it will be a major and important tool in the coming decades that will help the dental industry serve the majority of people not taking advantage of the current oral health care system. It will also be an important tool in helping the dental industry achieve the triple aim of improving the experiences of care for most people, improving the oral health of the population, and lowering the per-capita cost to do so.

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