

# EXPANDING ORAL HEALTH: TELEDENTISTRY

## Improving Oral Health Using Telehealth-Connected Teams and the Virtual Dental Home System of Care: Program and Policy Considerations

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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.<sup>1,2,3</sup> 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. In 2019, over 50 states reimburse for some form of live video in Medicaid fee-for-service.<sup>2</sup> Eleven state Medicaid programs reimbursed for store-and-forward and five others have laws in this area but no mechanism yet.<sup>1,2</sup>

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cost and with greater patient and provider satisfaction, increasing the ability to reach the quadruple aim.<sup>4</sup> In 2019, eight states have policies specific to

Teledentistry is part of a broader digital health transformation that is leading to better outcomes, at a lower

teledentistry.<sup>2</sup> However, very few states have a policy environment that fully supports the range of possibilities to improve health and care using teledentistry.

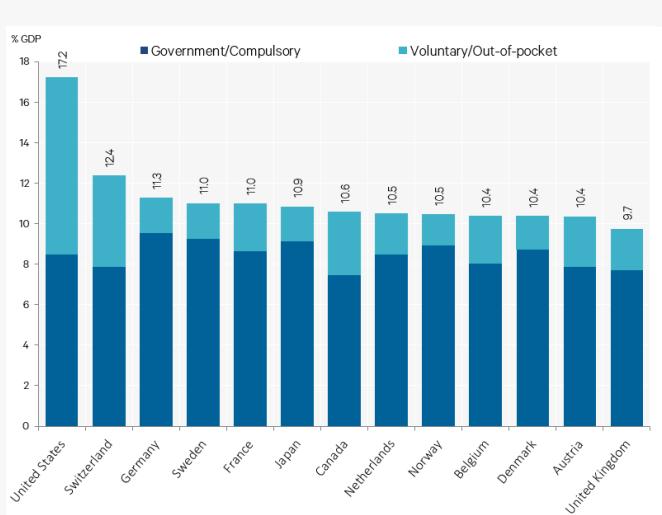
The goal of this report is to illustrate the potential for the use of telehealth connected teams — combined with new preventive and behavior support science, delivery systems, payment incentives, and policy environments — to fundamentally alter strategies for achieving “oral health for all.”

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 in the delivery of dental services. The report also reviews telehealth modalities and oral health systems that use telehealth. 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 will play in the coming decades in the delivery of oral health services.

# DRIVERS OF CHANGE IN GENERAL AND ORAL HEALTH

## The General Health Industry Is Facing Significant Pressure to Change

The general U.S. health care system is undergoing tremendous change. This is driven by increased recognition that the current system spends too much money and achieves too little. U.S. health care spending is approaching 20% of the Gross Domestic Product (GDP) as illustrated in Figure 1.<sup>5</sup> This is significantly higher than in other developed countries.



**Figure 1:** Comparative Health Care Spending as a Percent of GDP<sup>2</sup>

Note: Expenditure excludes investments, unless otherwise stated.

There is ample evidence that the United States gets poor results for all this spending compared to other developed countries, which spend less than half of U.S. spending as a proportion of their GDP on health care. Poor results are measured in many ways including significant health disparities in the U.S. population.<sup>6,7</sup> There is also growing recognition, as described below, that the same factors apply in the oral health industry.

## The Oral Health Industry is Undergoing Significant Change

Currently, the majority of the U.S. population does not receive regular dental care. In fact, only about 40% of the U.S. population has even a single annual dental visit.<sup>8</sup> Many people face significant barriers

to obtaining dental care in dental offices and clinics. These barriers include 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.<sup>9</sup>

The consequences of these disparities in access to care include significant gaps in oral health among many, especially low-income groups, people in racial and ethnic minorities, people living in rural areas, and people with complex medical problems and disabilities.<sup>10,11,12</sup>

Per-capita visits to dental offices began to drop in 2003 and declined for the next decade.<sup>13</sup> In addition, dentists' income, which had been rising steadily until 1999, remained flat through 2005 and also declined for the next decade.<sup>14</sup> The American Dental Association (ADA) 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.<sup>15</sup>

Specific recommendations for improvement in oral health have come from many prestigious national panels, including the U.S. Preventive Services Task Force and the Health and Medicine Division (HMD) of the National Academies of Sciences, Engineering, and Medicine (the National Academies), formerly known as the Institute of Medicine (IOM).<sup>16,17,18,19</sup> It has become clear that the path to improving population oral health involves emphasis on significantly different activities than have been used in the traditional oral health care system.

The 2011 IOM report on *Improving Access to Oral Health Care for Vulnerable*

**Currently, the majority of the U.S. population does not receive regular dental care.**

*and Underserved Populations* described a number of strategies to address problems with access and oral health.<sup>18</sup>

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 nondental 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 can provide services to the highest level of their training and experience
- Driving change and accountability using quality metrics and outcomes assessment
- Using payment incentives to focus provider activities on those activities most likely to improve the health of the population at the lowest cost possible

In parallel to the development of recommendations about changing health care systems, there have also been significant developments in the ability to help children and adults have and maintain good oral health through interventions delivered in community settings.

These include:

- Risk assessment and minimally invasive interventions such as those that can control and reverse the caries process<sup>20</sup>
- Remineralization agents and strategies including fluoride products such as fluoride varnish that can reverse demineralization of enamel early in the dental caries process<sup>21</sup>
- Caries arresting medications, such as silver diamine fluoride, that can arrest the progress of existing dental caries lesions<sup>22</sup>
- Techniques involving sealing caries that can be provided by allied dental personnel in community settings,<sup>23</sup> such as interim therapeutic restorations, which allow restorations to be placed with less removal of tooth structure compared to conventional restorations and without the need for anesthetic injections or drilling
- Community-based strategies for supporting people to adopt oral healthy habits<sup>24,25,26</sup>

All of these developments create new opportunities to integrate oral health improvement activities with community education, social service, and general health organizations, as well as improve and maintain oral health in community sites outside of dental offices. With the addition of telehealth-connected teams that can reach people who do not traditionally receive regular dental care, we have the opportunity to fundamentally advance the ability to improve the oral health of the population, lower the cost for providing care, and lower the cost and consequences of neglect.

# ORAL HEALTH WITHIN THE HEALTH CARE DELIVERY SYSTEM

As our general health care system — and the oral health care system in particular — begins to focus on bringing health care services to those individuals and groups who have been traditionally underserved, the use of telehealth has become an important and viable tool. In fact, delivery of oral health services using telehealth can be described as an emerging “disruptive innovation” in the oral health industry.<sup>27</sup>

This report focuses on strategies for using telehealth and systems to:

- bring dental care to community sites where underserved populations receive educational, social, and

- general health services, plus integrate oral health services with those systems;
- emphasize prevention and early intervention activities;
- manage disease over time;
- build geographically distributed teams leveraging existing and emerging allied dental professionals; and
- link services provided in the community with dental offices and clinics where more advanced services can be provided.

An emerging delivery system concept is the “Community-Engaged Dental Practice”. This refers to the idea of “dental care systems without walls” and the potential to use telehealth-connected teams to engage currently underserved populations, intervene earlier in the disease process, expand oral health care business models and improve the oral health of the population.

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## WHAT IS TELEDENTISTRY?

The Center for Connected Health Policy/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.”<sup>28</sup> 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.

Specific definitions of telehealth vary widely. For example, California law defines telehealth as

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“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.”<sup>29</sup>

In contrast, the federal Health Resources and Services

Administration (HRSA) defines telehealth as “the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration.”

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. As noted by the Center for Connected Health Policy,<sup>2</sup> 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 ADA House of Delegates adopted a resolution that defined and recognized the value of teledentistry in dental practice.<sup>30</sup> 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.”

# 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 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 that 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 is reviewed by a health care provider in a location separate from where the patient resides. This can be done synchronously or asynchronously. Examples include the Holter monitor, which measures 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 smart phones, tablets, smart voice assistants and computers. These mobile devices can support interactions that overlap with the categories described above.

# TELEDENTISTRY CODING

The American Dental Association in 2018 added 2 new codes to the Code on Dental Procedures and Nomenclature (CDT) code set related to teledentistry.<sup>31</sup> These are:

- D9995 teledentistry – synchronous; real-time encounter
- Reported in addition to other procedures (e.g., diagnostic) delivered to the patient on the date of service

- D9996 teledentistry – asynchronous; information stored and forwarded to dentist for subsequent review
  - Reported in addition to other procedures (e.g., diagnostic) delivered to the patient on the date of service.

These codes have not been universally adopted, and where they are used, they are most likely to be used as tracking mechanisms rather than for billing purposes. At the time of this writing, most payment systems do not attach a fee to these codes.

# THE PUBLIC POLICY LANDSCAPE

There are several legal and regulatory issues that can either inhibit or facilitate realizing the potential benefits of telehealth-connected teams to deliver oral health services. 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.<sup>2</sup> While there is increasing interest in the use of telehealth tools and continuous advancement in the number of states adopting laws and regulations that support the use of telehealth-connected oral health teams to deliver dental services, those states with fully enabling policy environments remain in the distinct minority. In 2019, there were eight states with policies specific to teledentistry. Only a few states such as California, Colorado, Minnesota, and Arizona have policy environments that generally support the range of possibilities to improve health and care using teledentistry. Yet, even those states do not have complete “teledentistry parity.”

## Payment Considerations

In a state where the ability to use and get paid for using telehealth to deliver oral health care is not defined or clear, the regulatory environment must be addressed before systems using these technologies can or will be deployed. Fortunately, the ADA now has a policy on the use of store-and-forward teledentistry

and a number of states have passed laws and adopted regulations based on California’s landmark law.<sup>32</sup> This makes it easier for advocacy groups, decision makers, providers, and other stakeholders, to use the experience in

those leading states to adopt similar policies.

To create a legal environment that supports the use of telehealth, it is useful to consider telehealth as communication tools. These tools are distinct from the health services that are being provided. With this in mind, the health care provider, including oral health care providers, should be permitted to provide any service for which they are licensed and make decisions about which tools to use to provide those services, including telehealth communication tools. This is sometimes referred to as creating “telehealth parity”.

As an extension of this principle, the following wording should be used when establishing rules for payment of services performed using telehealth: “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.” It is also critical that telehealth, both synchronous and asynchronous, can be used for the delivery of dental services and to establish an individual as a patient of the provider. However, even if a state adopts broad policy statements such as these, it is still important to address several specific issues described herein.

In addition to variation in payment policies among states, there is variation in policies between states and federal payment mechanisms and between public and private payment mechanisms. Medicare, which generally does not support dental care, includes a number of restrictions on the use of telehealth services.<sup>3334</sup> Those states that have adopted payment policies related to teledentistry have generally focused on Medicaid payment mechanisms. One exception is Hawaii, which adopted legislation in 2016 that requires the state’s Medicaid managed care and fee-for-service programs and certain employer-sponsored programs to cover services provided through telehealth if the

**... the regulatory environment must be addressed before systems using these technologies can or will be deployed.**

service is covered were it provided through in-person consultation between a patient and a health care provider.<sup>35,36</sup>

It would be ideal if there were uniform payment policies among federal, state and private payment systems that fully supported telehealth parity. However, it will likely be some time before that can happen. In the meantime, states can support significant advancement

in oral health care by evolving their own policy environments with an initial focus on public payment programs.

### **... states can support significant advancement in oral health care by evolving their own policy environments ...**

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 or dentist-to-physician consultations using telehealth.

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, guidance or regulations would need to be developed.

There are several principles for creating a scope of practice environment that supports the use of telehealth and allows allied personnel to function using telehealth interactions. The 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.<sup>6</sup> 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 is imperative that allied oral health personnel, with necessary training and working under telehealth or general supervision or predetermined protocols, be allowed 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. The use of allied dental personnel deployed in community sites can directly contribute to cost containment and financial viability by reaching people early in the disease process and reducing the cost of providing diagnostic, prevention, and early intervention services.<sup>37</sup>

### **Liability Coverage Considerations**

Some oral health care providers are concerned about liability coverage policies when they use telehealth. However,

a survey of liability coverage carriers in California provided uniform assurance that, if the provider was performing procedures that they could perform under their license, their coverage would be in effect regardless of whether they were using telehealth or not. It may be necessary in some states to create policy statements stating that this is the case. In 2016, Hawaii adopted telehealth legislation that specifically required that professional liability insurance policies provide malpractice coverage for telehealth and that it be equivalent to coverage for the same services provided via face-to-face contact between a health care provider and a patient.<sup>38</sup>

### **The use of allied dental personnel deployed in community sites can directly contribute to cost containment and financial viability ...**

## HIPAA Considerations

Questions can arise about compliance with the Health Insurance Portability and Accountability Act (HIPAA) when using telehealth to provide health care services. The same considerations apply about patient privacy and data security that apply in a dental office environment.

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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, best practices would be to encrypt the data so it cannot be accessed should the device be lost or stolen, and to maintain constant contact with the device to prevent theft.

## Considerations in Using Mobile or Portable Delivery Systems

Several 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 containing a dental operatory that are driven to a community location. In general, portable refers to 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, regulations about mobile and portable delivery systems can impact delivery systems in which telehealth is 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.<sup>38,39</sup>

There is no reason why regulations concerning the use of mobile or portable delivery systems should impact the ability to use telehealth. If a state has regulations that do restrict the ability to use telehealth, those regulations should be modified to remove those restrictions.

## Summary of Policy Considerations

In summary, a policy environment that supports the benefits of using telehealth-connected teams to deliver dental services should have the following components:

### Scope of Practice:

- Allow allied oral health personnel to collect diagnostic records in community locations where a dentist is not present, including images (radiographic and photographic), charting, and other components of a complete electronic dental record.
- Allow allied oral health personnel in community locations where a dentist is not present to perform preventive and early intervention procedures such as placement of silver diamine fluoride and interim therapeutic restorations.
- Consider telehealth technologies as communication tools distinct from the health services that are being provided. The health care provider should be permitted to perform any procedure for which they are licensed and make decisions about which tools to use, including telehealth communication tools. Include both real-time synchronous as well as store-and-forward asynchronous telehealth tools.

### Payment:

- Create telehealth parity across Medicaid and commercial markets whereby any procedures that are paid for when performed using in-person visits are also

paid for when they are accomplished using telehealth interactions.

- Consider the following wording when establishing rules for payment of services performed using telehealth: “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.”
- Include both synchronous and asynchronous telehealth when used to deliver dental services and to establish an

individual as a patient of the provider.

#### Other:

- Ensure that laws or regulations about data security and privacy do not inhibit the use of telehealth.
- Ensure that laws or regulations about liability coverage support the use of telehealth.
- Ensure that laws or regulations about the use of mobile or portable delivery systems do not inhibit the use of telehealth.

# FROM POLICY TO PRACTICE: IMPLEMENTING TELEDENTISTRY

## General Concepts

Once a state has adopted a policy environment with scope-of-practice and payment arrangements that enable teledentistry, there are many different business models that can be adopted to put teledentistry-supported delivery systems into place.

Some possibilities include:

### **Outreach to existing patients of a dental practice:**

Some patients stop coming for regular appointments because of health, mobility, or other challenges. A dentist may decide to have their dental hygienist go to a nearby assisted living facility or residence where some of their former patients now live and collect diagnostic records and provide prevention and early intervention services. That patient may still make a trip to the dental office occasionally, if needed for some complex treatment.

### **Facilitate direct access dental hygiene practice:**

Most states have adopted a form of “direct access” dental hygiene, where dental hygienists can, in certain circumstances, provide dental hygiene services for patients without a dentist being involved.<sup>40</sup> Adding a telehealth component to these hygiene practices can elevate them to a more full-service delivery system by connecting to a collaborating dentist who can perform diagnostic

services and more complex surgical services when needed.

### **Integrate oral health in general health care environments:**

In several states, dental hygienists and other allied dental personnel are being deployed in general health care environments where they can engage patients and provide prevention services. Adding a telehealth component to these practices can elevate them to a more full-service delivery system by connecting to a collaborating dentist who can perform diagnostic services and more complex surgical services when needed.

### **Include mobile and portable delivery:**

As described above, a full-service telehealth-connected team delivery system can include dental hygienists and other allied dental personnel working in community sites, workplaces, or homes to collect diagnostic records and perform prevention and early intervention procedures. When an individual needs surgical services beyond what can be provided by the dental hygienists or other allied dental personnel on site, there are several options for accomplishing the additional treatment. For example, the patient can be referred to a dental office for that treatment. Alternatively, the dentist could come to the community site occasionally to perform those services using portable or mobile equipment.

## Software, Hardware, and Operational Protocols

There are many hardware and software systems that can be used successfully to deliver oral health care using telehealth-connected teams. In addition, there are many other considerations and planning steps needed to develop a successful teledentistry model.

The author and colleagues have developed an extensive library of resource materials to help providers address these issues. These are the general topics covered:

- Completing regulatory requirements
- Deciding on, purchasing, and deploying equipment
- Selecting and setting up an electronic dental records system for teledentistry
- Creating an information technology environment with connectivity so telehealth-connected oral health teams can be successful
- Developing and executing agreements with community organizations where telehealth-connected teams will be deployed
- Developing workflows and protocols for services at community sites and in “hub” dental practice and clinic sites
- Enrolling patients in a telehealth-connected team system – paperwork and processes
- Delivering seamless patient care in a distributed care structure
- Designing and using strategies for achieving optimum health outcomes through support for adoption of healthy behaviors and habits
- Developing measures and evaluating outcomes of the telehealth-connected team systems

## Program Examples

Telehealth 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 health care professionals, i.e. dentist-to-dentist or dentist to-physician interactions, to comprehensive care systems using geographically distributed telehealth-connected teams.

In New York, a collaborative program between the Eastman Institute for Oral Health at the University of Rochester and the Finger Lakes Community Health Center has been operating for several years. The program uses transmitted video to determine the need for general anesthesia among children from migrant farmworker families, as well as real time video conferencing 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 or other consultation.<sup>41</sup>

mHealth uses in oral health includes information and data

sharing between patients and providers. One modality is mobile apps, like the two developed at the Arizona School of Dental and Oral Health. The first, called Text2Floss, pushes text reminders about preventive procedures to patients, and the other is PH2OH, which helps patients monitor the pH of their saliva and sends that information to their dentists.<sup>42</sup> The development of connected toothbrushes is another example. When connected to mobile devices, these toothbrushes can provide reminders and motivation to brush; collect data; and transmit data to a dentist.<sup>43,44</sup> This area is expected to expand dramatically in the future.

Some providers use real time video conferencing, in some cases enhanced by real-time transmission of intraoral videos using special 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 uses a combination of real time (including phone calls) and store-and-forward technologies for DHATs to communicate with their supervising dentist.<sup>45</sup>

At the University of Colorado School of Dental Medicine, a program called *Building Equity Through Telehealth Reach (BETTR)* is supporting local practitioners as they adopt telehealth-connected team

**These interventions save the families a long drive for what can turn out to be a short preoperative or other consultation.**

systems by hiring and deploying dental hygienists, making arrangements with community sites, and connecting these hygienists and sites to local practitioners.

Finally, start-up companies are being formed with the understanding that teledentistry will be a significant part of the dental care industry in the future. One such company, Virtual Dental Care, offers a full suite of software specifically designed for teledentistry, hardware with various configurations of portable

equipment, and support systems that vary — from the company making all arrangements for services with dental hygienists and community sites to

support for dental providers wishing to handle those activities within their practices.<sup>46</sup> Other companies now offering software or other support for teledentistry systems include The Teledentists, Mouthwatch, and Flossbar.<sup>47,48,49</sup> Many more will be entering the market in the near future.

### The Virtual Dental Home System of Care

The Virtual Dental Home System of Care (VDH) is an example of a comprehensive care system that uses telehealth-connected teams and store-and-forward record review for provision of full-service dental care. It 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.<sup>37,50</sup> Specifically, VDH is an approach that uses 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.

VDH uses telehealth technology to link dental hygienists and expanded function dental assistants in the community with dentists in dental offices and

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**... VDH is an approach that uses telehealth technologies to facilitate a comprehensive community-based system of care ...**

clinics, facilitating access to the full dental team and comprehensive dental care. Community-based allied dental personnel (which, in California, specifically refers to 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 cloud storage system to a clinic or dental office, where a dentist 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 apply silver diamine fluoride or provide a type of small protective filling called an interim therapeutic restoration, which stabilizes 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.

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.<sup>37</sup> 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, pain, and infection. The key results of that demonstration were:

- **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.** Most people are kept and verified healthy onsite. 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 and not connected to the community-based activity, 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 need care in the dental office or clinic.

- **Dentists integrated into the care system.** Telehealth allows the geographically distributed teams to provide full dental services even though members of the team are in different locations.

# EVERYONE BENEFITS

## Providers

The availability of dental delivery systems using telehealth-connected teams creates possibilities for establishing a community-engaged practice — a dental practice where the provision of dental services is no longer restricted to the physical office. Some members of the team can be in the surgical suite or the dental office, while some members of the team are in community sites. It can still be all one practice, with team members, patients, and delivery sites linked together using telehealth. The community-engaged dental practice can serve more people and, importantly, serve people who are not currently receiving dental care. This is a shift in the business model for dental care that is focused on performing less costly and complex procedures, but expanding the populations engaged in the care system — a win-win for currently underserved populations and for the oral health industry.

## People Needing Dental Services

People who do not get regular dental care often cite barriers such as cost, transportation, location of dental offices, hours of operation of dental offices, and cultural and language access issues. Bringing dental care to where people are, in community locations and integrated with educational, social, and general health systems, can address all these and other barriers. People who are sometimes described as not understanding the need for dental care, or not wanting to access dental services, turn out to be very appreciative of care provided in locations where they are receiving other services, as well as care that emphasizes prevention and early intervention services.

**This is a shift in the business model for dental care that is focused on performing less costly and complex procedures, but expanding the populations engaged ...**

**Enacting supportive policies and using telehealth-connected teams (and the other strategies described in this report) will allow public and private programs to reach more people and “buy more health per dollar” of public spending.**

## Policymakers

Public officials and policymakers commonly struggle with inadequate utilization of dental care and the high costs of neglected dental disease.

Enacting supportive policies and using telehealth-connected teams (and the other strategies described in this report) will allow public and private programs to reach more people and “buy more health per dollar” of public spending.

They also allow states to realize the longer-term direct benefits of reduced dental disease and indirect benefits of having a healthier population, better able to be employed and contribute to society.

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