Published in final edited form as:
J Calif Dent Assoc. 2012 July ; 40(7): 605–611.

The Virtual Dental Home: Implications for Policy and Strategy

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Abstract

Widely recognized problems with the U.S. health care system, including rapidly increasing costs and disparities in access and outcomes also exist in oral health. If oral health systems are to meet the “Triple Aim” of improving the experience of care, improving the health of populations, and reducing per capita costs of health care, new and innovative strategies will be needed including new regulatory, delivery, and financing systems. The virtual dental home is one such system.

Widespread oral health disparities exist in the United States.[1] The American Dental Association has estimated that around 30 percent of the population has difficulty accessing dental services through the current private dental care delivery system.[2] A national analysis in 2010 by the Government Accountability Office (GAO) indicated that only about one-third of children enrolled in Medicaid received any dental service during the 2008 fiscal year.[3] These and many other reports clearly identify significant disparities in oral health among population groups.

The situation is worse in California, where only 26 percent of enrolled beneficiaries of the Denti-Cal system received any services in 2007.[4] Also in California, in 2008, 24 percent of all children, ages newborn to 11, had never seen a dentist.[5] In 2011, only 22 percent of the total number of people eligible for Medi-Cal dental services received any service, a decrease of 8 percent from 2009. A decrease was expected for adults since most adults benefits were eliminated in 2009. However, there was also a decrease for children. In 2011, only 27 percent of eligible children received any dental service compared to 34 percent in 2009.[6]

In 2011, the Institute of Medicine (IOM) and the National Research Council of the National Academies of Science issued two reports on oral health, “Advancing Oral Health in America” and” Improving Access to Oral Health Care for Vulnerable and Underserved

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Populations."[7,8] Both of these reports document the significant proportion of the U.S. population that does not have access to oral health services and the disparities in oral health among population groups.

The U.S. health care system is under increasing pressure to improve performance. These changes are being driven by the widespread realization that the costs of the current fragmented system are increasing at alarming rates, and that in spite of spending close to twice the percent of our national gross domestic product (GDP) on health care compared to other developed countries we have significantly worse health outcomes in general and huge health disparities among subpopulations.[9–11] These factors are driving reform of the health care system and creating pressure to form a more accountable system by moving from a system based on volume of services provided to one based on the value of those services.[11–17] Donald Berwick, former administrator of the Centers for Medicare and Medicaid Services (CMS) and former president and chief executive officer of the Institute for Health Care Improvement has referred to the goals of this movement as the Triple Aim.[18] The three aims are improving the experience of care, improving the health of populations, and reducing per capita costs of health care.

As described in a 2012 report, "Oral Health Quality Improvement in the Era of Accountability," the factors that are driving reform in the general health care system all apply to the delivery of oral health care.[19] Achieving the Triple Aim in oral health care will require important changes in the systems used to deliver oral health services to populations that are not adequately served by the traditional office and clinic-based oral health delivery system.

The IOM report, "Improving Access to Oral Health Care for Vulnerable and Underserved Populations," calls for research and demonstrations of new systems to improve oral health for vulnerable and underserved populations that emphasize prevention and early intervention and use new methods and technologies such as: bringing care to where people are by delivering oral health services in nontraditional settings; engaging nondental professionals; developing expanded duties for existing oral health professionals or creating new types of dental professionals; and using technologies such as telehealth.[8] The IOM report also calls for research and demonstrations of delivery systems that are based on measures of access, quality, and outcomes, and for incorporating these measures in payment and regulatory systems.

The Pacific Center for Special Care at the University of the Pacific, Arthur A. Dugoni School of Dentistry has created and is demonstrating a new oral health delivery system, the virtual dental home, which is designed to move oral health services for underserved and vulnerable populations toward the Triple Aim.

The Virtual Dental Home

The virtual dental home is an innovative new model for delivering dental care. It is applicable for a wide variety of population groups, especially those who are currently inadequately served in traditional dental settings. The model incorporates many of the recommendations from the IOM report, "Improving Access to Oral Health Care for Vulnerable and Underserved Populations" by:

- Bringing oral health services to locations where underserved vulnerable populations receive educational, social, and general health services and integrating oral health with services provided in those settings;
- Expanding duties for existing oral health professionals;

- Emphasizing prevention and early intervention oral health procedures; and
- Creating a geographically distributed but coordinated dental team through the use of telehealth technologies.

The model initiates an individual's care needs in a community setting. By aligning the skills and capacity of a dental care provider in the community with a dentist in an office, high-quality coordinated care is provided using telehealth technology and electronic health records (EHRs).

The settings for care in the virtual dental home system include Head Start Centers, schools, residential facilities for people with disabilities, and long-term care facilities for dependent adults. The services provided include diagnostic, preventive, and early intervention restorative care. Where more advanced care that can only be provided by a dentist is required, case management techniques are employed to refer patients to dental offices and clinics. The dental team includes dentists who review electronic records and make diagnostic and treatment decisions and allied dental professionals who collect records and provide preventive and early intervention services in community settings under the general supervision of dentists.

In the virtual dental home model, early intervention restorative care is provided through a Health Workforce Pilot Project (HWPP) authorized by the California Office of Statewide Health Planning and Development.[20] HWPP No. 172 authorizes registered dental hygienists in alternative practice (RDHAP), registered dental hygienists working in public health programs (RDH), and registered dental assistants (RDA) to place interim therapeutic restorations (ITR) after being instructed to do so by a dentist.[21] Further detail about the other aspects of the design and structure of the virtual dental home model is contained in other articles in this issue.

The virtual dental home demonstration project is now operating in nine sites in California. The project has successfully demonstrated the ability to deploy geographically distributed, collaborative, telehealth facilitated teams who are seeing patients, performing prevention and early intervention services, and making and supporting referrals for treatment that needs to be performed by dentists. Preliminary data indicates that approximately half of the individuals served by this system can achieve and maintain good oral health by services provided exclusively in the community by allied personnel under general supervision of dentists.

The virtual dental home demonstration project has an expert advisory committee that has provided feedback on the design and deployment of the model, contributed to identifying the potential for spread of this model, and contributed to the development of recommendations to facilitate sustainability and spread of this system of care.

The virtual dental home advisory committee concluded that the current system for delivering dental care is not optimized to improve or maintain oral health for many underserved people. In order for innovations in the delivery of oral health care, such as the virtual dental home to be sustained and spread, alterations are needed in the educational environment that trains providers, state systems that regulate scopes of practice and the delivery of services, and financing mechanisms. The following issues have been identified as focus areas for spread of this model.

Additional Populations

Underserved populations currently being served, and those likely to be further served by this model have high dental needs, or are good candidates for early population-based and

community-based prevention and early intervention measures. These groups face significant physical, geographic, cultural, or financial barriers that make it difficult to access the current care delivery system. The virtual dental home system provides triage and entry to the oral health delivery system for individuals who are institutionalized or vulnerable. The virtual dental home model provides an access point for education, screening, and case management for individuals known to have barriers to accessing dental services in traditional locations. Perhaps most importantly, the mobility of the virtual dental home model brings these services to communities that may not currently have delivery system capacity.

The populations currently being served are Head Start and elementary school children, adults with developmental disabilities living in group homes, and residents of skilled nursing and acute care facilities. Populations not currently being served but who might benefit from this model include: children in school-based health centers, families participating in Women, Infants and Children (WIC) programs, migrant children and adults, patients of community health centers, incarcerated populations, veterans, institutionalized mentally ill persons, children in the foster care system, adults in drug-treatment programs, homeless populations, home-bound adults and children, low-income community-dwelling adults, older dependent adults who attend day programs, and those living in rural communities.

Workforce Integration, Education and Deployment

Provider participation will be critical in order for this model to spread. The patients being cared for via this model are challenged by significant health, behavioral, financial, and/or transportation barriers and most do not access care in traditional dental practice settings. Many dentists are realizing that there is significant potential for this model to expand their practice and bring patients to their practices who might not have otherwise accessed their services. In the virtual dental home model, dentist's roles are also expanded as they learn to work with a geographically distributed team of allied dental personnel and use telehealth technology to evaluate patients, make treatment decisions, and communicate with the dental team. Patients referred to the practice come with dental records collected and preventive procedures completed, making the time in the dental office more efficient.

An additional provider participation issue is their willingness to make treatment decisions based on a virtual examination. Another article in this issue provides data demonstrating that dentists can make the same decision based on virtual records that they would with an in-person examination. This method of making treatment decisions is new to most dentists and represents an opportunity for dentists and allied dental personnel to expand their ability to work in a telehealth facilitated model of care. The model also expands the roles of oral health professionals into interdisciplinary team-based models emphasizing overall patient-centered care in health systems and whole child well-being in educational systems. It will take training and experience for providers to be comfortable using new technology and working in more integrated systems.

Another unique aspect of the virtual dental home model is that it brings dental care to individuals who do not receive care in dental offices or clinics. Doing this requires new roles for all members of the dental team in new practice environments. The virtual dental home model expands the scope of practice of current allied personnel to make the decision about which, if any, radiographs to take to facilitate an initial oral evaluation by a dentist, and to place ITRs. The safety and efficacy of these scope changes are being demonstrated through HWPP No. 172. Sustainability and spread of the virtual dental home model will require these duties be incorporated into the scope of practice for these license categories.

Spreading the virtual dental home model involves creating an adequately trained and deployed oral health workforce. Formal education of dentists, dental hygienists, and dental

assistants in telehealth technology and the techniques needed to work in geographically distributed teams may be a new thread in oral health education programs. Curriculum on community-based practice may also need to be increased including topics on health promotion, working with community partners, public health approaches, and working in integrated health teams.

Implementing the virtual dental home model requires culture change among caregivers and administrators of agencies providing education, general health, and social services. These individuals and agencies do not traditionally see themselves as having a role in the delivery of health care in general or oral health care in particular. This model presents an opportunity for changing these traditional views through education for nondental professionals about their role and the role of their institutions in maintaining oral health. In addition, many of the virtual dental home model's intended populations have low dental literacy as do many caregivers.[7] There is an opportunity to integrate messages about the importance of oral health and how to prevent oral disease into the activities of community agencies and facilities and increase the impact of these messages on individuals and their caregivers.

Integrating oral health professionals into the structure of nontraditional settings helps normalize these messages, provides a reputable source of evidence-based information and encourages ongoing communication about improved oral health as a lifelong commitment. Fundamentally, the integration of oral health into educational, general health, and social settings must begin at the top of the organization as these changes are not quick or easy.

Spread of the virtual dental home model will require concerted outreach and education efforts targeted to oral health professionals, administrators and staff of educational, general health, and social services agencies and policy-makers. The messages need to help these diverse groups understand the benefits of the virtual dental home model in their own work as well as for the people they work with on a daily basis.

Electronic Health Records and Telehealth Technology

The virtual dental home model of care uses a cloud-based electronic health record (EHR) system called Denticon.[22] This system allows records to be collected in one location and reviewed in a geographically separate location. There are a number of opportunities to spread this system. One of these is to address the lack of interoperability between electronic health record systems. For more than a decade, the federal government had set a goal to create a national health information infrastructure (NHII) with broad adoption and use of EHRs and interoperability between EHRs collected by various systems and providers.[23] While billions of dollars have been allocated for this purpose, EHRs are still not universally used in medical or dental practice, and interoperability does not yet exist, even in practices that use EHRs. This makes for the need, in some circumstances, for double data entry or the need to refer to two record systems for complete information about a patient in the virtual dental home model.

Another opportunity to spread the use of telehealth technologies is to address the fact that the current regulatory environment in most states and in California allows payers to withhold payment for services if they are provided using telehealth technologies. As described in more detail in another article in this issue, in 2011, California Assemblymember Dan Logue (R-Lake Wildwood) introduced Assembly Bill 415, the Telehealth Advancement Act of 2011.[24,25] Effective Jan. 1, 2012, this new law modernizes California's landmark Telemedicine Development Act of 1996 to reflect advances in the field since the original law's passage. It also updates the definition of telehealth to reflect the broader range of services in use today, and allows all licensed health professionals in California to engage in telehealth.

One intent of the legislation was to propose a way to create parity between health services delivered using in-person methods with health services delivered using telehealth methods. The important determinant should be whether the service was delivered effectively and not the technologies chosen by the provider to deliver the service. However, the law does not mandate that the Medicaid system or any other payers reimburse providers for services delivered using telehealth technologies. There is an opportunity for stakeholder groups to introduce follow-up legislation to address this issue.

Currently the California Medicaid system reimburses for store-and-forward applications related to teledermatology, teleophthamology and specific types of teleoptometry services.[26–28] Given that telehealth services used in the virtual dental home model use the same store-and-forward system for collecting records and reviewing them at remote locations, a strong argument can be made that these services should be covered as well.

The virtual dental home will be facilitated as the use of EHRs becomes more ubiquitous and challenges with interoperability among dental software systems decrease. As electronic health records evolve, there may be greater standardization and ability of systems to interoperate that would increase the willingness of providers to engage in this model of care. Additional requirements for the model to be successful are access to reliable broadband, financing of start-up capital costs, ongoing technical training and access to technical assistance, and clear understanding of the financial and other practice benefits of adoption.

Practice Management Considerations

In order for the virtual dental home model to be incorporated into practice on a larger scale, management of dental practices must be addressed. This includes incorporating telehealth practice into traditional practices through the use of bridging tools to increase compatibility with existing dental record technology and billing systems.

As the virtual dental home model has evolved it has become apparent that teams of providers must be optimized and deployed for the population being served. Customization of the team requires that liability coverage be expanded to provide coverage for allied dental personnel working in community settings, as well as for dentists in offices and clinics. An aspect of the telehealth model that may be particularly attractive to providers is the inherent flexibility of a store and forward process, opening up a host of new potential practice arrangements.

Financial Issues

The current virtual dental home demonstration project is being financed by grant funding and existing traditional payment sources, primarily fee-for-service Denti-Cal (California's dental Medicaid system). Dentists and allied dental personnel get partial payment from grant funds for health promotion and other activities not reimbursable through current funding streams, and payment from existing funding streams for some traditionally covered services. Virtual dental home model sustainability requires financial support for activities such as case management, health promotion and education, intensive community-based prevention efforts based on individualized risk assessment, and community-based early intervention procedures.

Reform efforts in the broader health care environment such as the patient-centered medical home and accountable care organizations, emphasize outcomes or value-based systems rather than system based on volume of services such as fee-for-service arrangements.[9,18–32] Preliminary evidence from the National Demonstration Project on the Patient Centered Medical Home shows that these new models are feasible, but, like the virtual dental home

project, the process for change is challenging with operational, cultural, and policy issues that need to be addressed.[33]

Another opportunity to spread the virtual dental home model is to address the lack of recognition of the importance of oral health in federal and state policies and regulations. Dental services are an optional benefit under the federal Medicaid program and, in 2009, California reduced coverage for adults to only federally required adult dental services (FRADS). Even "covered" populations do not have dental coverage designed for the virtual dental home model of care. Denti-Cal, the California Medicaid system, does not provide reimbursement for the costs of case management, telehealth consultation, and community-based prevention and treatment activities. By tying payment mechanisms to population health outcomes, delivery systems could have financial support for and place greater emphasis on community-based case management, telehealth consultation, and community-based prevention and treatment activities. These activities can result in more "health per dollar" of spending if the focus shifts to the health outcomes of services provided.

Critical to allocating adequate funding to support new models of care is the need to educate policy-makers about the financial benefits of community-based prevention and early intervention services. There is increasing evidence that these services save on multiple consequences of the neglect of dental disease. The costs of neglect include the need for more complex dental treatment later on if prevention and early intervention services are not in place. In addition, neglect leads to expensive hospital emergency department visits that do little to treat the actual source of the problem, very expensive treatment in hospital operating rooms for advanced dental disease or severe dental infections, and lost days of school and work due to dental problems.[34–36] There is also increasing evidence that prevention and early intervention oral health services can reduce the staggering costs associated with general health conditions such as diabetes and pneumonia.[37–43] By focusing on prevention and early intervention, the virtual dental home model can help to drive down the total cost of oral and general health care.

Another opportunity related to funding mechanisms involves expanding the virtual dental home model in federally qualified health centers (FQHCs). The FQHC system could be an important system in which to demonstrate the value of the virtual dental home model because FQHCs primarily receive payment based on encounters that provide latitude about what is done at each visit.[44] They are also typically very oversubscribed and have much higher demand for their services than they can provide.[45] In addition, services are provided primarily in dental chairs in the FQHC dental clinic so the number of people served could be greatly expanded if they served a portion of their target population in community sites. However, FQHCs in general, and particularly in California, face several regulatory barriers to adopting this approach. Telehealth delivered services are not recognized and billable visits as services must be delivered in a face-to-face encounter. It is also difficult to be reimbursed for encounters that take place outside the "four walls" of the dental clinic. Finally, although dental hygienists are now recognized in California as "billable providers," the procedures for billing for their services are complex and few FQHCs have adopted them.[46,47] If these issues were addressed, FQHCs could potentially increase the number of patients they are able to serve and keep healthy by severalfold.

In order for the virtual dental home model to spread, there will need to be new financing models developed that remove regulatory barriers to the use of telehealth-enabled services delivered outside of the "four walls" of offices and clinics and that provide incentives for improving the health of the target population, not just those who walk through the doors of the dental office or clinic.

Moving to the Future

There is increasing demand for the virtual dental home model as the success of the current demonstration is being recognized and communicated among those interested in access to dental care and oral health for the vulnerable and underserved populations. Administrators of long-term care facilities, school district health program administrators and administrators of group homes are communicating with Pacific directly and requesting support and guidance for implementation of a virtual dental home telehealth program in their communities and for their students and clients.

In summary, the following recommendations will facilitate realization of the full benefits of the virtual dental home model:

- Expand demonstrations of the effectiveness of the virtual dental home model to additional populations and sites including migrant child care programs, community health centers, incarcerated populations, veterans, institutionalized mentally ill persons, children in the foster care system, drug treatment programs, homeless populations, home-bound adults and children, low-income community-dwelling adults, older dependent adults who attend day programs, and those living in rural communities.
- Incorporate the duties being tested under California HWPP No. 172 into the scope of practice of allied dental personnel.
- Develop and incorporate curriculum on working in geographically distributed, telehealth-enabled, community-based teams into oral health professional education programs.
- Educate caregivers and administrators of agencies providing education, general health, and social services about the importance of oral health and the benefits of the virtual dental home model and help them develop a vision for how the model can help them in their own work as well as benefit the people they work with on a daily basis.
- Require the Medicaid system and other payers to reimburse providers for oral health services delivered using telehealth technologies. The important determinant should be whether a covered service was delivered effectively and not the technologies chosen by the provider to deliver the service.
- Support the adoption and spread of interoperable EHRs in dental practice.
- Educate policy-makers about the huge cost of neglect of dental disease and the potential savings from supporting community-based prevention and early intervention services.
- Allow and support federally qualified health center’s ability to bill for services provided outside the “four walls” of the clinic and to bill for services provided using telehealth-enabled encounters and by allied dental personnel in order to facilitate the delivery of telehealth-enabled community-based services.
- Develop payment mechanisms that move payment for oral health services from “volume to value” by basing payment on health outcomes in the target population.
- Encourage dental benefit plans and other public and private payers to adjust coverage options for systems based on individual risk assessment with an emphasis on community-based case management, health promotion and prevention activities for those who are not able to access care in the traditional dental office or clinic setting.

- Advocate for state Medicaid agencies to fund pilots of systems of care like the virtual dental home and support studies of the health outcomes of these systems.

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