



POLICY BRIEF

THE VIRTUAL DENTAL HOME

**IMPROVING THE ORAL HEALTH OF VULNERABLE AND UNDERSERVED POPULATIONS
USING GEOGRAPHICALLY DISTRIBUTED TELEHEALTH-ENABLED TEAMS**

MAY, 2013

Pacific Center for Special Care



WHY IS A NEW SYSTEM OF ORAL HEALTH (DENTAL CARE) NEEDED?

Many Californians face serious obstacles in obtaining dental services. These individuals may have complex medical, physical or social conditions that make it difficult to get to a dentist's office. They may be institutionalized, economically disadvantaged or living in remote or underserved areas. It has been estimated that over 30% or more of the population of California, or over 11 million children and adults are not able to get their oral health needs met through the traditional dental care system. As a result, they have significantly worse oral health than those in other segments of the population.

The Pacific Center for Special Care at the University of the Pacific, Arthur A. Dugoni School of Dentistry (Pacific) is demonstrating a new model of care. By creating a "Virtual Dental Home" in sites throughout California, Pacific is delivering oral health services in locations where people live, work, play, go to school and receive educational and social services. The Pacific Center has partnered with a number of funding organizations to implement this demonstration project to bring much-needed oral health services to these underserved populations. These populations range from children in Head Start Preschools and elementary schools to older or disabled adults in residential care settings or nursing homes.

Now in its third year of delivering much needed oral health services to California's most vulnerable and underserved citizens, the Virtual Dental Home has proven to be a safe, effective, and cost-effective system. This policy brief describes the model as well as the results of the current demonstration.

WHAT IS THE VIRTUAL DENTAL HOME?

The Virtual Dental Home (VDH) is a community-based oral health delivery system in which people receive preventive and simple therapeutic services in community settings. It utilizes telehealth technology to link allied dental personnel in the community with dentists in dental offices and clinics.

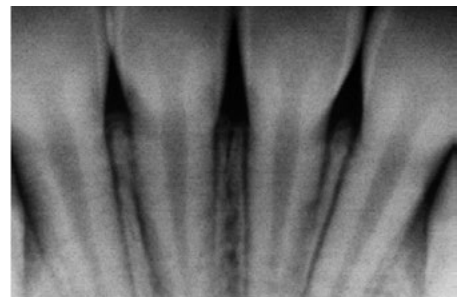
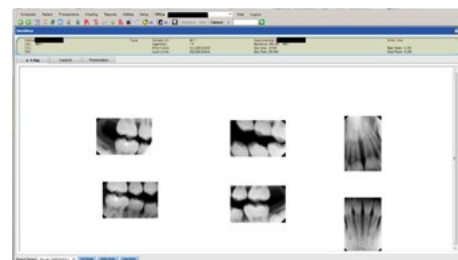
This project is demonstrating that registered dental hygienists in alternative practice (RDHAP), dental hygienists working in public health programs (RDH) and registered dental assistants (RDA) can keep people healthy in community settings by providing education, triage, case management, preventive procedures, and interim

therapeutic restorations. Where more complex dental treatment is needed, the Virtual Dental Home connects patients with dentists in the area.

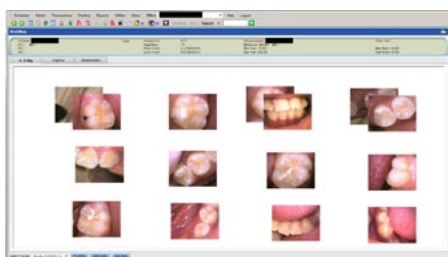
This system promotes collaboration between dentists in dental offices and these community-based dental hygienists and dental assistants. Most importantly, it brings much-needed services to individuals who might otherwise receive no care.

"The VDH is located in the exact community that it serves. Access to health services is always improved when the services provided are in your own neighborhood." – VDH Site Administrator

HOW DOES IT WORK?



This model relies on the advanced training and community-based practice of a group of allied oral health professionals. In the Virtual Dental Home, the RDHAP, RDH, or RDA collaborates with a dentist to provide care. Telehealth technology helps bridge the geographic gap between the community provider and dentist.



Equipped with portable imaging equipment and an internet based dental record system, the RDHAP, RDH or RDA collects electronic dental records such as X-rays, photographs, charts of dental findings, and dental and medical histories, and uploads the information to a secure website where they are reviewed by a collaborating dentist. The dentist reviews the patient's information and creates a tentative dental treatment plan. The RDHAP, RDH or RDA then carries out the aspects of the treatment plan that can be conducted in the community setting.

These services include:

- Health promotion and prevention education
- Dental disease risk assessment
- Preventive procedures such as application of fluoride varnish, dental sealants and for dental hygienists, dental prophylaxis and periodontal scaling
- Placing carious teeth in a holding pattern using interim therapeutic restorations (ITR) to stabilize patients until they can be seen by a dentist for definitive care
- Tracking and supporting the individual's need for and compliance with recommendations for additional and follow-up dental services

It should be noted that "Interim Therapeutic Restoration" is the term developed by the American Academy of Pediatric Dentistry in its *Policy on Interim Therapeutic Restorations (ITR)*¹. As described in that document, this term is used to describe the technique referred to more broadly in the literature as Atraumatic Restorative Technique (ATR). The new term, ITR, is used to emphasize the provisional nature of the restoration. Allied dental professionals in the Virtual Dental Home demonstration project are placing ITRs under general supervision of dentists in a Health Workforce Pilot Project (HWPP) authorized by the California Office of Statewide Planning and Development (OSHPD)^{2,3}. This project is designated as HWPP #172. In addition to testing the ability of allied dental personnel to place Interim Therapeutic Restorations, this pilot project is testing the ability of these allied dental personnel to decide which radiographs to take in order to facilitate an oral evaluation by a dentist. These procedures have expanded the ability to create telehealth enabled, geographically distributed teams and to improve the oral health of the vulnerable and underserved populations participating in the Virtual Dental Home demonstration.

After the dentist reviews the electronic dental records, the RDHAP, RDH or RDA refers patients to dental offices for procedures that require the skills of a dentist. When such visits occur, the patient arrives with health history and consent arrangements completed, a diagnosis and treatment plan already determined, preventive practices in place and preventive procedures having been performed. The patient is likely to receive a successful first visit with

1 American Academy of Pediatric Dentistry. Policy on Interim Therapeutic Restorations (ITR). Adopted 2001. Revised 2004, 2008. http://www.aapd.org/media/Policies_Guidelines/P_ITR.pdf.

2 California Office of Statewide Planning and Development. Health Workforce Pilot Project Program. <http://www.oshpd.ca.gov/hwdd/HWPP.html>.

3 California Office of Statewide Planning and Development. Health Workforce Pilot Project Application #172. http://www.oshpd.ca.gov/hwdd/pdfs/HWPP/Abstract_HMPP172.pdf.

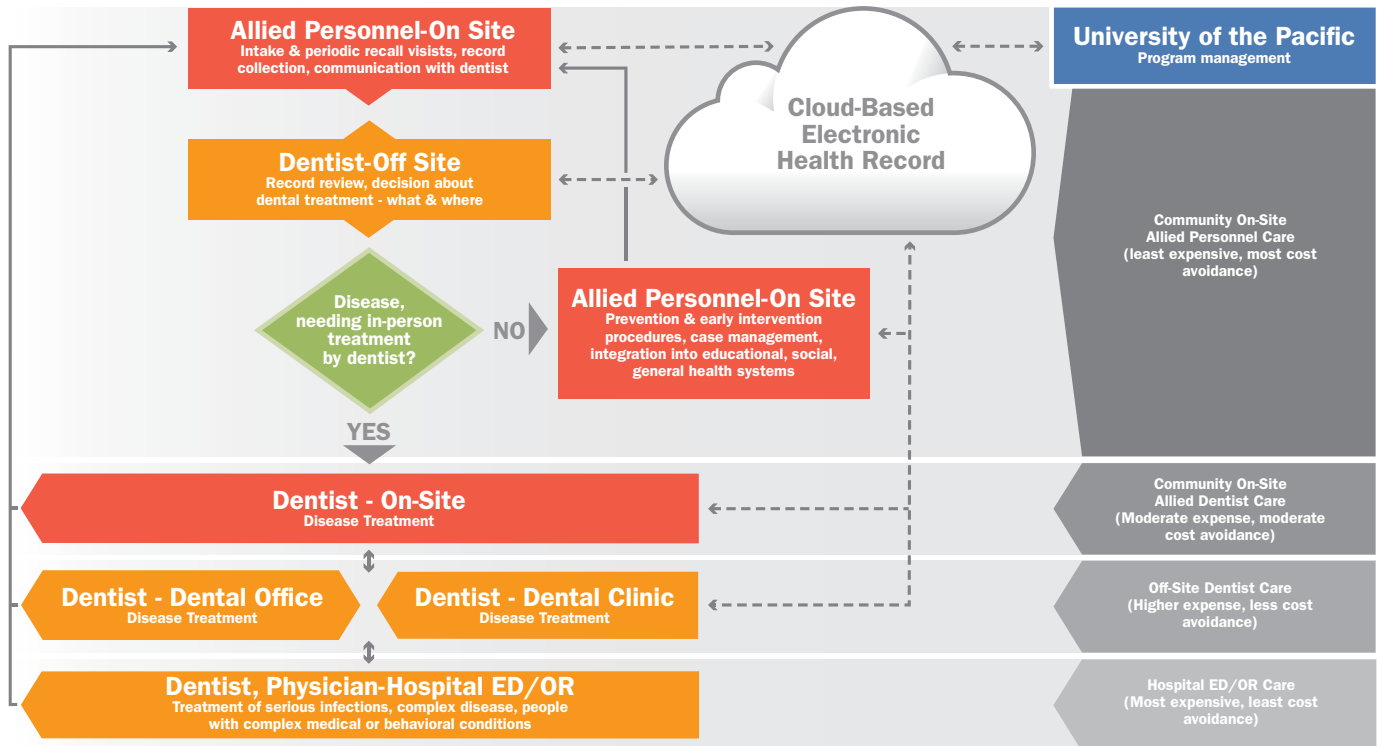
the dentist as the patient’s dental records and images have already been reviewed. All of this adds up to a more successful referral.

In some cases the dentist may come to the community site and use portable equipment to provide restorations or other services that only a dentist can provide. In either case, the majority of patient interactions and efforts to keep people healthy are performed by the RDHAP, RDH, or RDA in the community setting after consultation with a collaborating dentist, thus creating a true community-based dental home.

The Virtual Dental Home has been demonstrated in multiple communities in California including:

- Sacramento – Elementary school-based facilities working with community dentists
- San Francisco – Head Start Preschools working with a Health Center
- Visalia/Fresno – Nursing home facilities working with community dentists

- San Diego – Head Start Preschools and elementary schools working with a Health Center
- Eureka – Residential facilities for people with disabilities working with a Health Center
- Alameda and Contra Costa Counties – Residential facilities for people with disabilities working with community dentists
- Santa Clara and Santa Cruz Counties – Residential facilities for people with disabilities working with community dentists
- San Mateo County – Residential facilities for people with disabilities working with community dentists
- Pacoima – A community center working with community dentists
- San Mateo County – Head Start Preschools working with a Health Center
- Los Angeles – Head Start Preschools working with a Health Center



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Figure 1: The Virtual Dental Home Concept Model

RESULTS – PATIENTS, PROCEDURES AND VISITS

The Virtual Dental Home (VDH) demonstration project started patient care in July 2010. In December of 2010 authorization was received from the Office of Statewide Health Planning and Development (OSHPD) for Health Workforce Pilot Project # 172. Patient care with the new HWPP duties began in January of 2011. The allied dental personnel in the project have completed the following types of procedures:

- Collect patient information (including medical and dental history, consent forms, caries risk assessment)
- Chart pre-existing conditions
- Take digital radiographs
- Take digital intra and extra-oral photographs
- Prophylaxis
- Fluoride varnish
- Sealants
- Interim Therapeutic Restorations
- Patient, parent, and staff oral health education
- Nutritional counseling
- Oral hygiene instructions
- Case management
- Referrals
- Communication with collaborating dentist

“Just being able to be seen is a positive asset. As a school nurse who has been working in the district boundaries for over 20 years, I have seen the struggles families must overcome to get their child in for dental care.” – VDH Site Administrator

In addition to the procedures listed above performed by allied dental personnel, dentists in the project have performed initial and periodic patient evaluations using the telehealth system and performed other advanced dental procedures for patients referred to their offices.

Table 1 summarizes the number of patients and visits by the type of community site as of 4/30/13

| Population Type | # of Patients Seen | Total Visits |
|--------------------------------|--------------------|--------------|
| Head Start Preschool | 871 | 2537 |
| Elementary School | 214 | 1027 |
| Long Term Care Facility | 179 | 798 |
| Multifunction Community Center | 221 | 483 |
| Regional Center | 112 | 486 |
| Total | 1597 | 5331 |

Table 1: Virtual Dental Home Patients and Visits by Type of Site as of 4/30/13

Another benefit of the VDH model of care is that many individuals can receive all the care they need in the community location where the VDH program is located. After the dentist reviews the individual’s records and develops a set of recommendations and instructions, procedures that can be performed in the community location are performed there. When individuals need more advanced care, they are referred to dental offices or clinics. Even those individuals who need more advanced treatment in dental offices or clinics can then have continuing preventive services performed in the community site. Table 2 lists the percent of individuals participating in the VDH system that were deemed by the reviewing dentist to need care at that time in a dental office or clinic. It should be noted that the percent in long term care reflects the fact that some individuals who might have benefited from care in a dental office were too medically complex or fragile for a trip to a dental office to be advisable.

| Type of Site | % Needing Referral to Dental Office |
|-------------------------|-------------------------------------|
| Head Start Preschool | 43% |
| Elementary School | 66% |
| Long Term Care Facility | 51% |

Table 2: Percent of Individuals Deemed by Reviewing Dentist to Need Treatment in a Dental Office or Clinic as of 4/30/13

RESULTS – HEALTH WORKFORCE PILOT PROJECT PROCEDURES

As indicated above the Health Workforce Pilot Project (HWPP) associated with the Virtual Dental Home demonstration project is testing two duties not normally part of the scope of practice of allied dental personnel: The ability to decide which radiographs to take to facilitate an oral evaluation by a dentist and the ability to place Interim Therapeutic Restorations. The allied personnel in this project received didactic, laboratory, and directly supervised

Therapeutic Restorations were placed during the training phase of the program in addition to the 340 placed in the utilization phase for a total of 450. Those placed in the training phase were placed under direct supervision of dentists while those placed in the utilization phase were placed under general supervision of dentists. Under California law, general supervision refers to procedures performed by allied dental personnel based on instructions given by a licensed dentist, but not requiring the physical presence of the supervising dentist during the performance of those procedures.

| Population Type | # of Patients Seen | Xrays Taken in Utilization | ITRs Placed in Utilization | ITRs placed in Training |
|--------------------------------|--------------------|----------------------------|----------------------------|-------------------------|
| Head Start Preschool | 871 | 351 | 61 | 40 |
| Elementary School | 214 | 300 | 14 | 20 |
| Long Term Care Facility | 179 | 109 | 178 | 10 |
| Multifunction Community Center | 221 | 201 | 33 | 20 |
| Regional Center | 112 | 64 | 54 | 20 |
| Total | 1597 | 1025 | 340 | 110 |

Table 3: HWPP Procedures Performed as of 4/30/13

clinical training in these duties. They were then closely monitored in what is called the “utilization” phase of the project by both the collaborating dentist in their community and an independent dentist evaluator not connected with the care they are providing in their community.

Table 3 lists the number of HWPP procedures performed as of 4/30/13. Note that every patient seen in the project had a decision made about which radiographs to take, even if the decision was not to take any radiographs. There have been 1597 patients seen and therefore 1597 decisions even though there were only 1025 instances where the decision was to take radiographs. Also note that 110 Interim

As described above, allied dental personnel participating in this project have been closely monitored in what is called the “utilization” phase of the project by both the collaborating dentist in their community and an independent dentist evaluator not connected with the care they are providing in their community. A specific set of criteria and rating rubric is used for rating the decision about which radiographs to take and placement of Interim Therapeutic Restorations. The procedures that meet the criteria are rated as acceptable. Procedures that do not meet the criteria are rated as unacceptable.

In addition to the dentist evaluators of the results of the HWPP duties being tested, there is a system in place to report any adverse outcomes. This would include patients who developed problems as the result of procedures performed by allied dental personnel participating in the project.

As listed in Table 4, all procedures performed by the allied dental personnel have been rated as “Acceptable.” No procedures were rated as “Unacceptable.” In addition there have been no reports of adverse outcomes reported in this project.

| Procedure Performed During Utilization Phase | # Performed | # of Procedures Rated as Acceptable | # of Procedures Rated as Unacceptable | Adverse Outcomes |
|--|-------------|-------------------------------------|---------------------------------------|------------------|
| Radiographic Decision | 1597 | 1597 | 0 | 0 |
| Interim Therapeutic Restoration | 340 | 340 | 0 | 0 |
| All Other Procedures | 8934 | - | - | 0 |

Table 4: Ratings of Procedures and Occurrences of Adverse Outcomes as of 4/30/13

These results demonstrate that allied dental personnel in the Virtual Dental Home demonstration project are able to perform the duties being tested under HWPP #172 safely and effectively.

RESULTS – SATISFACTION SURVEYS

The Virtual Dental Home (VDH) demonstration was designed as a patient-centered model of care that would address obstacles to accessing dental care faced by many underserved and vulnerable people in a manner that was sensitive to and respectful of the needs and desires of patients, caregivers, and administrators. To assess the satisfaction of those groups a series of satisfaction surveys were conducted in 2012 and 2013. As indicated in Table 5, satisfaction with the VDH system among parents of children served is quite high with 86% of all respondents indicating that they were “very satisfied” (79%) or “somewhat satisfied” (7%) with the overall dental care their children received. Perhaps more importantly, satisfaction surveys also revealed that nearly all respondents (95%) indicated that they would continue with the program if it continued to be available.

| Satisfaction | Number Responding | % of Respondents |
|-----------------------|-------------------|------------------|
| Very Satisfied | 34 | 79% |
| Somewhat Satisfied | 3 | 7% |
| Somewhat Dissatisfied | 4 | 9% |
| Very Dissatisfied | 0 | 0% |
| I do not know | 2 | 5% |
| Total | 43 | 0 |

Table 5: Patient/Parent Satisfaction with VDH System as of 4/30/13

Satisfaction surveys also assessed the degree to which the VDH model addressed known barriers to receiving oral health services. Table 6 indicates that nearly all respondents reported that the VDH made dental care more convenient (79%) than the traditional system, that their children had less fear (35%) of receiving dental care in the VDH compared to the traditional system, that wait times were shorter (47%), and that the quality of dental care through the VDH was higher than alternatives (42%). Nearly half of all respondents (47%) also indicated that they saw lower cost as a benefit of the dental care delivered through the VDH.

| Benefit | Number Responding | % of Respondents |
|----------------------------|-------------------|------------------|
| It is much more convenient | 34 | 79% |
| There is less fear | 15 | 35% |
| The wait time was less | 20 | 47% |
| The quality is better | 18 | 42% |
| The investment is lower | 20 | 47% |

Table 6: Reported Benefits for Patients and Caregivers from the Virtual Dental Home as of 4/30/13

Table 7 indicates that administrators of organizations and facilities affiliated with the VDH are also highly satisfied with the system with 96% of respondents reporting that they are “very satisfied.”

Additional results reported by school administrators were that students and families faced fewer transportation issues, had lower cost for care, appreciated the flexible appointment scheduling, faced reduced language barriers, and had an easier time getting dental care for young children and individuals with behavior challenges or complex medical problems.

| How Satisfied are you with the dental care provided through the VDH? | | |
|--|----------------|------------------|
| Satisfaction | Response Count | % of Respondents |
| Very satisfied | 25 | 96.2% |
| Somewhat satisfied | 1 | 3.8% |
| Not very satisfied | 0 | 0.0% |
| Not at all satisfied | 0 | 0.0% |
| Don't know | 0 | 0.0% |

Table 7: School Administrator Satisfaction with the Virtual Dental Home as of 4/30/13

ECONOMIC ANALYSIS

The Virtual Dental Home demonstration project has been funded through grants and contracts from federal and state government sources and private foundations. An analysis has been conducted to project the economic viability of this model of care if it were to be supported by the California Dental Medicaid program, Denti-Cal. Denti-Cal was chosen for this analysis because over 90% of the patients seen in the program are enrolled in the California Medicaid program and eligible for Denti-Cal benefits. It should be noted that Denti-Cal benefits are available for adults living in Intermediate Care Facilities (ICF) and Skilled Nursing Facilities (SNF) and similar

the procedures performed by allied dental personnel in the Virtual Dental Home demonstration over the last year and applying current Denti-Cal fees to those procedures that are covered under the Denti-Cal program.⁴ Table 8 lists the potential average payment for procedures performed for children in the Virtual Dental Home demonstration program and compares those results with current Denti-Cal payments for diagnostic and preventive procedures. The Denti-Cal system paid \$83.13 per child per visit for diagnostic and preventive procedures and \$123.64 per child per year for these same procedures. In the Virtual Dental Home model, Denti-Cal would have paid \$136.04 per year or \$42.91 per visit for children in elementary schools and \$120.28 per year or \$41.05 per visit for children at Head Start Preschools for these procedures. In the VDH model these visits included ITR procedures in addition to the diagnostic and preventive procedures paid for by Denti-Cal. Therefore, Denti-Cal would have paid less for these prevention and early intervention procedures using the VDH model than Denti-Cal is currently paying in the traditional model of care. In addition Denti-Cal is paying for an average of 1.61 visits per child for diagnostic procedures and 1.39 preventive procedures per year while the VDH model is providing an average of 2.93 diagnostic and preventive visits per child in Head Start Preschools and 3.17 in elementary schools at a lower average cost per child.

| Potential Billing | Elementary Schools | | | Head Start Preschools | | | All Children | | |
|--------------------------|--------------------|----------|----------|-----------------------|----------|----------|--------------|----------|----------|
| | Visits/Yr | \$/Yr | \$/Visit | Visits/Yr | \$/Yr | \$/Visit | Visits/Yr | \$/Yr | \$/Visit |
| VDH | 3.17 | \$136.04 | \$42.91 | 2.93 | \$120.28 | \$41.05 | - | - | - |
| Denti-Cal Payment (2012) | - | - | - | - | - | - | 1.61 | \$123.64 | \$83.13 |

benefits are available for adults in the California Regional Center system. However, the results presented here are for children as the best comparison data from the current Denti-Cal program is available for children.

Potential Billing from the Virtual Dental Home Model of Care

A calculation was performed of potential billable procedures under the California Denti-Cal program by listing

Table 8: Average Visits and Potential Payment for VDH Program Compared with Current Denti-Cal Program Payment for Diagnostic and Preventive Procedures as of 4/30/13

Cost of Providing Care in the Virtual Dental Home Model

The next analysis performed was a calculation of the costs for providing services through the Virtual Dental Home model.

⁴ Denti-Cal's MCS0070 Report Fiscal Year 2012

Table 9 contains a projection of costs for providing care in the Virtual Dental Home model in elementary schools and Head Start Preschools based on the experience in the Virtual Dental Home demonstration. The expenses for oral health personnel are listed along with those for supplies and amortization of equipment. This data is presented as per visit costs.

The VDH model will have even better economic viability as our oral health care system turns further toward paying for health outcomes since it provides a low cost system for getting preventive and early intervention care to many children who do not normally access dental care in the traditional delivery system.

| Average Cost | Elementary School Visit | | | Head Start Preschool Visit | | |
|------------------|-------------------------|-----------|----------------|----------------------------|-----------|----------------|
| | Rate/Hr | Hrs/Visit | \$/Visit | Rate/Hr | Hrs/Visit | \$/Visit |
| Hygienist | 42 | 0.50 | \$21.00 | 42 | 0.33 | \$13.86 |
| Dental Assistant | 15 | 0.50 | \$7.50 | 15 | 0.33 | \$4.95 |
| Dentist | 75 | 0.13 | \$9.38 | 75 | 0.13 | \$9.38 |
| Supplies | - | - | \$3.00 | - | - | \$2.00 |
| Equipment | - | - | \$1.00 | - | - | \$1.00 |
| Total | - | - | \$41.88 | - | - | \$31.19 |

Table 9: Average costs for the Virtual Dental Home Model of Care in Schools and Head Start Preschools as of 4/30/13

The costs for providing care in the VDH model consist of per hour payments to dentists and allied dental personnel as described above plus costs for supplies and amortized costs for equipment. As the VDH project has progressed the time per visit has decreased. It is estimated that in a production environment the allied dental personnel could see 3 children per hour in a Head Start Preschool and 2 children per hour in an elementary school. Adding an estimated \$2 per visit for supplies and \$1 per visit for amortized equipment produces a cost per visit of \$31.19 in Head Start Preschools and \$41.88 in elementary schools. This cost would be slightly less than projected billing per visit. It is noteworthy to realize that the VDH system delivers significantly more care than the current Denti-Cal system does in that it includes ITR procedures, patient, parent and caregiver education, integration of oral health considerations in these social and educational systems, and case management.

CONCLUSIONS

The Virtual Dental Home model is a system of care that has been demonstrated in a multi-site demonstration project across California. Included in the demonstration is a Health Workforce Pilot Program that has demonstrated the safety and acceptability of two procedures when performed by allied dental personnel. The Virtual Dental Home system has proven to be a safe and effective method to bring dental care to California’s most vulnerable and underserved populations. It is also a system for providing essential prevention and early intervention services at a low cost per individual.

“The VDH is unique expansion of health programs within a school setting and would improve health care services for all types of schools and students.” – VDH Site Administrator

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More information about the Virtual Dental Home demonstration project is also available at:

[http://dental.pacific.edu/Community_Involvement/Pacific_Center_for_Special_Care_\(PCSC\).html](http://dental.pacific.edu/Community_Involvement/Pacific_Center_for_Special_Care_(PCSC).html)

Scroll down the page and choose the link to Virtual Dental Home