Robert Wood Johnson Foundation
Workforce Innovations in Oral Health

Dental Professionals in
Non-Dental Settings

SYNTHESIS REPORT
September 2013

Robert Wood Johnson Foundation

Dental Professionals in Non-Dental Settings

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TABLE OF CONTENTS

ABOUT THE PROGRAM

The Systematic Screening and Assessment of Workforce Innovations in the Provision of Preventive Oral Health Services is a project to identify promising workforce innovations that have the potential to increase Americans' access to preventive oral health services.

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Introduction

BACKGROUND

The Robert Wood Johnson Foundation (RWJF) conducted the *Systematic Screening and Assessment of Workforce Innovations in the Provision of Preventive Oral Health Services* to identify promising models that increase access to oral health services. This initiative was a collaborative effort to conduct evaluability assessments (EAs) by RWJF and ICF International between December 2011 and May 2013. The purpose of the EAs, or pre-evaluations, was to determine what workforce programs, interventions, policies, and models were ready for a rigorous evaluation to assess their effectiveness in increasing access to care and prevention of oral disease.

Lack of access to preventive oral health care for all ages remains a public health challenge (U.S. Department of Health and Human Services, 2000). Currently, potentially promising workforce innovations are being used to improve access to preventive oral health care. Examples include improving the diversity of the workforce; enhancing the education of health care professionals; encouraging the participation of non-dental health care professionals, expanding the roles of existing dental professionals; and developing new types of dental professionals. In most cases, these innovations do not have robust outcome data demonstrating their impact on access to care or oral health status. Findings from these initiatives provide timely evidence to inform practice and policy in many areas critical to improving the nation's access to oral health care.

While there are efforts to document promising approaches or public health strategies for oral health, the evidence base of workforce innovations aimed at increasing access to preventive oral health care is limited. More research is needed to develop this evidence base regarding the effective and efficient utilization of the existing oral health care workforce and the impact of new workforce models on access to preventive care. To create this evidence base we must have a better understanding of the current interventions and practices being implemented and what works best.

The results from this project will inform programmatic efforts and evaluation planning at RWJF. Based on the overall findings from 25 evaluability assessments, innovations that demonstrate promise in using members of the health care workforce to provide preventive oral health services may be evaluated for effectiveness and to promote replication.

FOCUS OF THIS REPORT

This report focuses on nine oral health innovations seeking to increase access to preventive oral health care in non-dental settings. Two additional reports in this series describe the remaining programs that provide care in dental settings and care to young children. The nine innovations described here integrate service delivery and workforce models in order to reduce or eliminate socioeconomic, geographic, and cultural barriers to care. Although the programs are diverse in their approaches as well as in the specific characteristics of the communities they serve, a common factor among them is the implementation of multiple strategies to increase the number of children from low-income families who access preventive care, and also to engage families and communities in investing in and prioritizing oral health.

For low-income children and their families, the barriers that must be addressed to increase access to preventive oral health care are numerous. For example, even children covered by public insurance programs face a shortage of dentists that accept Medicaid and who specialize in pediatric dentistry (Guay, 2004). The effects of poverty intersect with other barriers such as living in remote geographic areas and having a community-wide history of poor access to dental care in populations such as recent immigrants (Guay, 2004, Institute of Medicine [IOM] and National Research Council [NRC], 2011). Overcoming these barriers requires creative strategies that address transportation barriers, establish welcoming environments for oral health care, and are linguistically and culturally relevant. Each of these nine programs is based on such strategies, including:

- Expanding the dental workforce through training new types of providers or adding new providers to the workforce to increase reach and community presence;
- Implementing new strategies to increase the cost-effectiveness of care so that more oral health care services are available and accessible;
- Providing training and technical assistance that increase opportunities for and competence in delivering oral health education and care to children;
- Offering oral health care services in existing, familiar community venues such as schools, Head Start programs and senior centers;
- Developing creative service delivery models that address transportation and cultural barriers as well as the fear and stigma associated with dental care that may arise in communities with historically poor access.

The findings from the EAs of these programs are synthesized to highlight diverse and innovative strategies for overcoming barriers to access. These strategies have potential for rigorous evaluation and could emerge as best practices. If proven effective, these innovative program elements could then be disseminated and replicated to increase access for populations in need of preventive oral health care.

Literature Review

Access to dental care for underserved populations remains a concern in spite of advances in the field of dentistry, especially in regards to preventive oral health care. Vulnerable populations, including children and families of low-socioeconomic status; those living in rural areas; senior adults; and persons with disabilities remain at-risk of not having access to dental care (Guay, 2004). For example, in 2008, 4.6 million children did not access dental care because their families could not afford it (Bloom, 2009) and for seniors with basic health coverage, including Medicare and Medicaid, emergency dental care is generally covered rather than routine or preventive care (Texas Dental Association, 2008).

Although the barriers to care for such populations are numerous and complex, solutions lie not just in increasing the amount or "supply" of services, but in fostering demand through assuring that services are affordable and accessible (Guay, 2004). A number of programs across the United States are overcoming these barriers by locating services in venues that are already regularly frequented by underserved populations, eliminating the necessity of planning and travel to another location for preventive oral health care, including schools, other children's educational programs, and senior centers.

Through expansion of the settings in which dental services are provided, many vulnerable populations are able to access care they might otherwise not be able to receive. Most of the programs reviewed in this report focus on services that are built into existing community venues, including schools, Head Start programs, and senior centers. The benefits of providing care in non-dental settings include reduced patient anxiety due to accessing care in familiar settings low or no transportation costs, and reduced empty appointment slots. Because patient recruitment takes place on-site, there generally are sufficient individuals in need of care present to fill available slots (Silow-Carroll, 2004). Although the majority of services provided are preventive and diagnostic, providing restorative care on-site or developing referral relationships with local dentists can address the need for further care. Strategies for delivering oral health care in non-dental settings in a cost-effective manner and expanding the reach and type of services delivered are continually evolving (IOM and NRC, 2011). Innovations such as telehealth technologies; intensive case management; collaboration with Federally Qualified Health Centers (FQHCs); and the use of portable equipment show promise for furthering the positive outcomes of these programs (IOM and NRC 2011).

The oral health workforce and workforce regulations supporting the provision of oral health care in non-dental settings also play a critical role in increasing individual's access to care in non-dental settings. According to HRSA, there are approximately 4,230 dental health professional shortage areas (DPSAs) in the United States, leaving approximately 49 million people without access to dental care services (HRSA, 2011). One way to close this gap is to alter the traditional provision of services by creating new environments that facilitate ease of access; this may be especially effective with underserved and vulnerable populations such as those listed above (Institute of Medicine (IOM) and National Research Council (NRC)). A growing number of dental providers have designed preventive oral health programs that take place in schools, senior centers, and community centers to assure reach to underserved populations (IOM and NRC, 2011).

The success of these programs may be linked to expanded scopes of practice for providers who are not dentists, such as dental hygienists and dental assistants, allowing the provision of preventive oral health services at locations where a dentist may not consistently be present (Mertz 2002, IOM and NRC, 2011). For example, under state of California legislation, a demonstration project allows registered dental hygienists in alternative practice (RDHAPs) to provide preventive oral health services such as fluoride varnishes; sealants; prophylaxis and periodontal scaling as well as interim therapeutic restorations (ITRs) under the remote supervision of a collaborating dentist through telehealth technology (Glassman, 2012). Through this workforce innovation enabled by legislation, dental providers can expand their reach and increase access to oral health services in non-dental settings such as homes for the disabled. Although there is concern that severity of oral disease resulting from a history of poor access to care and population-specific factors often requires complex restorative treatment (Guay, 2004), there are also emerging models for assuring quality of care that involve partnerships with FQHCs, telehealth, and strong referral relationships with local dentists that have addressed these concerns (IOM and NRC, 2011). In fact, dentists have often been the driving force behind creating programs in non-dental settings (Glassman, 2012). Dental schools and dental provider training programs also play a role in increasing workforce for programs in non-dental settings, both by requiring students to complete a rotation in a non-traditional setting and by accepting referrals of patients in need of restorative care who are uninsured or unable to pay for services not covered by dental insurance (IOM and NRC, 2011).

The programs described in this report were specifically designed to operate in non-dental settings, and have developed innovative strategies for working within existing community services and establishing partnerships that enable services to be provided. Above and beyond establishing access in convenient locations, they have integrated workforce and program innovations that increase effectiveness of non-dental settings as well as common long-term outcomes such as increasing oral health, and reducing the progression and new incidence of tooth decay.

Methods

SYSTEMATIC SCREENING AND ASSESSMENT METHOD

We used the Systematic Screening and Assessment (SSA) Method to identify real-world interventions and select those that are both ready for evaluation and highly promising in terms of their plausible effectiveness, reach to the target population, feasibility, and generalizability (Leviton, Dawkins, and Kettel Khan, 2010). The SSA Method integrates expert review with evaluability assessment (EA) as a means to identify promising practice-based strategies worthy of more rigorous evaluation studies (Leviton and Gutman, 2010), assessing plausibility; implementation; data availability; design; and analytic issues among the programs.

THE SSA METHODOLOGY

1. Solicit nominations of promising programs and innovations.

2. Engage a panel of experts with knowledge in oral health, health workforce, health education and promotion, and evaluation to conduct an initial review of the initiatives and identify those that merit further study.

3. Conduct EAs of the selected programs.

4. Provide constructive feedback to the programs for further refinement.

5. Facilitate a second review by the expert panel of the selected programs after considering the results of the EA and have the expert panel rate their promise and readiness for evaluation.

6. Provide a list of most promising programs for further evaluation and program development.

NOMINATION AND SELECTION OF INNOVATIONS

ICF worked closely with RWJF to solicit nominations of promising programs or innovations. To initiate the nomination process, the ICF project team prepared the nomination form and distributed it to numerous national, state, and local organizations to generate interest and nominations. Nominations were received for a total of 99 programs. Based on the nomination forms and follow-up conversations with program staff, ICF staff members developed two- to three-page summary descriptions of each program. Programs that were not currently implemented, had not been implemented for at least six months, not offering preventive oral health services, or already undergoing evaluation were excluded. A total of 80 summary program descriptions were developed and provided to the expert panel for review.

Systematic Screening and Assessment of Workforce Innovations in the Provision of Preventive Oral Health Services Project

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In June 2012, the project team convened a panel of 19 experts in the areas of dentistry, oral health prevention services, oral health workforce innovations, and evaluation. The expert panel used the criteria described in Table 1 to rate and select programs for an EA.

TABLE1 **Criteria for Selecting Programs for an EA**	
Criterion	**Description**
Reach to target population	The percentage of the target population reached or in some other way positively affected by the intervention.
Acceptability to stakeholders	The potential or actual evidence that the intervention is acceptable and even attractive to pertinent collaborators, gatekeepers, and other necessary groups, such as dental clinics, dentists, and patients.
Feasibility of implementation	The likelihood that the intervention as designed can be or has been implemented fully, given the clarity of its goals, objectives, and strategies; complexity and leadership requirements; financial and other costs; and training and supervision requirements.
Feasibility of adoption	The potential for other sites or entities to adopt the intervention—particularly for multiple states or regions or racial/ethnic groups.
Transportability or generalizability	The degree to which the intervention demonstrates or has potential to be adapted for other settings that differ in size, resources, and demographics.
Staff and organizational capacity	Sponsoring organization and staff have the capacity to participate fully in brief assessment, learn from it, and further develop the program.
Sustainability of health effect	Will the intended health effect of the intervention endure over time?
Potential impact	The potential for the innovation to increase access to oral health care. Estimate of potential impact can be based on face value, program documents, and/or expert input.

The expert panel selected 25 oral health workforce innovations for further examination through an EA. This report describes nine of these programs, which broadly address barriers to access through their work in non-dental settings. Two other reports in this series describe the remaining programs, including workforce programs that provide preventive care to young children (infants and WIC participants) and innovations that address barriers to care.

EVALUABILITY ASSESSMENT

At the core of the SSA Method is the EA. The primary objectives of the EAs were to examine the plausibility that the innovations would produce the desired outcomes, the programs' feasibility of fully implementing the innovations, and the programs' options for further evaluation.

Each EA involved (1) a review of background documentation about the program; (2) the development of a program logic model to outline program goals and activities; and (3) a 2.5-day site visit, in which two trained site visitors assessed implementation data collection, and evaluation capacity through interviews with program staff and partners. In general, interviewees discussed the program goals; current activities; data collection efforts; staffing; funding; challenges; and successes.

As part of the EA, site visitors developed logic models to visually represent the logic or theory of a program. The logic models linked program resources and activities to expected outcomes and goals. Site visitors used the logic models to clarify their understanding of program components and to elicit feedback from program staff. After each discussion about program activities, outcomes, goals, and evaluation capacity, site visitors and program staff revised the logic model to ensure it accurately reflected the program. Components of the logic model are described in greater detail below.

DATA SOURCES AND ANALYSIS

The project team and expert panel reviewed the findings from all the EAs to determine the degree of promise of the various programs and their readiness for rigorous evaluation. Primary data sources for this report were program nominations; expert panel preliminary review and perspectives; reports written by site visitors; logic models; and expert panel post-site review and recommendations.

Reports from the EA site visits were analyzed for themes. The findings from EAs of nine programs addressing barriers to oral health care are synthesized to highlight diverse and innovative strategies.

Context of programs

Between September and December 2012, site visitors conducted EAs of nine oral health programs providing preventive care in non-dental settings. All shared the goal of increasing availability of and access to oral health care for underserved populations by providing care in venues that people already frequent, rather than requiring them to travel to dental clinics.

The range and extent of oral health services provided by these programs varied. All provided preventive care, including screening, fluoride varnish, fluoride treatment, and oral health education; many provided prophylaxis, X-rays, sealants, and interim restorative care. The level of care provided was partly connected to the use of portable or mobile dental equipment. One program included three stationary chairs within school-based health centers. The number of sites served by the programs varied greatly, from 11 to over 200 sites, and frequency of visiting the sites ranged from once a week to once a year. Frequency of visits sometimes was based on recommended intervals of preventive care for young children or host-site requirements, such as for Head Start programs, but visit frequency also was affected by funding and availability of staff.

DESCRIPTION OF PROGRAM SETTINGS

Across all the programs, a diverse range of non-dental settings were served, including WIC clinics, VA hospitals, skilled nursing facilities, residential homes for the developmentally disabled, and homeless shelters. This report focuses on the settings visited for the EAs—Head Start programs, schools (elementary, middle and high schools), and senior centers.

Head Start Programs

Providing preventive oral health services to children in Head Start programs helps meet the requirement for children to have a dental exam within 90 days of entering the program, usually at the beginning of the school year. On-site preventive oral health care services lessen the burden on parents so they do not have to take time from work to get their children to an outside dental appointment. On-site services also build opportunities to educate parents about the importance of preventive care. Specific strategies implemented at Head Start programs included visits at regular intervals (three per year) and having dentists accompany expanded practice dental hygienists (EPDHs) to the sites, which is required by federal regulations for the first visit. Additionally, the EPDHs provided oral health orientation to the Head Start teachers, family advocates and health specialists, fostering buy-in for the program. Training topics included the benefits of fluoride; consequences of dental neglect; importance of oral hygiene; importance of continued access to dental care; and techniques for making the Head Start oral health program successful.

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Schools

As with other non-dental settings, school-based sites allow access to dental services for a large number of underserved children in a manner that reduces parental burden. Schools also have the benefit of providing a familiar setting for children to receive oral health care. Six of the assessed programs provide oral health and hygiene education, dental cleanings, fluoride varnishes, and sealants in elementary and middle schools. The services are provided by dental hygienists as well as dentists. To determine what dental services are needed, the dental hygienist completes an assessment form such as the Caries Management By Risk Assessment (CAMBRA) tool. Some of the programs have a dental assistant or coordinator who plays an active role in scheduling appointments in a manner that accommodates class schedules and other school activities such as district-wide testing. Several school-based programs are staffed by dental and dental hygienist students from university training programs that have a requirement for a community rotation.

Senior Centers and Other Residential Facilities

Providing preventive oral health services to seniors at senior centers and people living with developmental disabilities increases access by providing a care setting that is comfortable, familiar, and allows accommodation of physical limitations. For example, portable equipment facilitates service for people who are in wheelchairs or who have other physical limitations because providers have more options for setup. The models for these programs vary. In one program, dental hygienists and collaborating dentists provide preventive care at senior centers. In another program, allied dental professionals conduct screening and assessment, and communicate with dentists to develop treatment plans using telehealth technology.

STRATEGIES USED IN SERVICE DELIVERY

Although the programs differed in terms of geographic locations and individual characteristics, common service delivery strategies increased their effectiveness and facilitated program operation. Service delivery strategies include referral systems; workforce adaptations; funding mechanisms; consent procedures; use of telehealth technology; and providing incentives. These strategies increased the reach and effectiveness of the preventive care provided, including eliciting buy-in from parents and other stakeholders. Some strategies also allowed the programs to operate from a more stable financial position. Other strategies, such as workforce adaptations to provide collaborative practice arrangements and remote supervision, increased the effectiveness of providing preventive care in non-dental settings.

Referral Systems

An important function of care in a non-dental setting is to identify patients with urgent dental problems and assure that they access restorative care as indicated. Screening in non-dental settings was often the first detection of urgent dental problems or oral disease that may not otherwise have been detected, and all the assessed programs had an established referral system for such patients. For example, for seniors in need of restorative care, dental hygienists established referral relationships with local dentists who had experience providing care to seniors, and who offered restorative care on a sliding scale or at a 25% discount. Several programs had structured systems of patient navigation or intensive case management for children needing urgent or restorative care. A few school-based programs had stationary chairs or appropriate portable dental equipment so that dentists could come to the sites and provide restorative care on a regular basis. Others partnered with local dentists and community health centers, including FQHCs, to assure that children with urgent need or with a treatment plan that included restorative care could access appointments. Program staff, including dental hygienists, dental assistants, case managers, Head Start staff, and in some cases school nurses and other host-site staff not only assisted in making appointments, but in addressing transportation and translation barriers.

Strong referral systems also helped address concerns that preventive dental services provided in non-dental settings would not be able to provide full treatment or offer only a "Band-Aid" approach. Through leveraging community resources, the programs enabled access to a full range of preventive and restorative care, and raised the chances of patients completing full treatment plans.

Workforce Adaptations

All the assessed programs used dental hygienists. Many dental hygienists were practicing under specific regulations, training, or legislation that allowed them to provide care outside of traditional dental offices. As a result, their scopes of practice and titles varied. Some registered dental hygienists were certified or received a "public health endorsement" to work in public health or non-dental settings without on-site supervision from a dentist. Their titles were modified to distinguish them as having received this training. For example, "expanded practice dental hygienist (EPDH)" denotes additional training or certification, as do titles such as "registered dental hygienist in alternative practice (RDHAP)." Additional roles assumed by the dental hygienists and dental assistants included patient navigation; case management; outreach; and securing parent or guardian consent. Some also established collaborations with local dentists to accept referrals of patients needing restorative care. In most of the assessed programs, various types of dental hygienists were able to offer at least some level of preventive care without a dentist on-site, but this was not always the case. Some FQHC guidelines require that hygienists be accompanied by a dentist when delivering care and some state regulations simply do not allow the provision of most preventive care procedures without the presence of a dentist. In one program, hygienists functioned as small business owners, and while they were required to secure a consulting dentist for their programs, they were able to function independently to provide preventive care at non-dental sites.

Funding Mechanisms

Funding arrangements for preventive oral health care in non-dental settings varied. In some states, Medicaid reimbursement covered a wide range of preventive care procedures, including those provided by dental hygienists. In others, coverage was limited. Coverage of costs with Medicaid and other public insurance funds ranged from complete to nearly complete coverage to no coverage, especially for adults with Medicaid or Medicare, which do not generally reimburse dental care except for specific emergency procedures. One program operated within a capitated Medicaid system, and the broad access provided through non-dental sites, along with their potential for minimizing future restorative costs, contributed to a model of cost-effectiveness. Workforce also determined reimbursement from public insurance; in certain states, preventive procedures provided by a dental hygienist in a non-dental setting are not reimbursable. Additionally, in some states, programs providing preventive care in non-dental settings had to apply to be added to lists of Medicaid providers in order to be reimbursed.

Many of the programs relied on grant funding to cover a large percentage of their costs. One program that took place at senior centers was solely funded by patient payments after individual sites were started by a dental hygienist with a business license. Following payment to the program, the hygienists assisted patients with private insurance by completing relevant sections of claim forms. Overall, Medicaid and other public insurance reimbursement were not automatic for preventive care provided in non-dental settings, and both billability and billing systems required some arrangement.

Systematic Screening and Assessment of Workforce Innovations in the Provision of Preventive Oral Health Services Project

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Consent Procedures

Obtaining parent or guardian consent was a strong component for all programs serving children in non-dental settings. These programs worked with Head Start or school staff to develop systems for obtaining consent, and several reported the assistance of host-site staff in explaining or reading consent forms to parents. Most consent forms included screening and basic preventive services, and were also seen as an opportunity to provide education to parents about the importance of early preventive care. Consent forms were available in multiple languages as needed. For children requiring restorative care, additional consent forms were used if it was feasible for the program to provide the restorative care. Obtaining consent seemed to be relatively successful for most of the programs serving children. Some programs reported rates of consent as high as 85 percent across multiple sites. The primary reasons for withholding consent were lack of trust in the safety of fluoride treatments and having private insurance.

Telehealth Technology

A number of programs used telehealth technology to collect patient data, document referrals provided to the patient and parents, and store X-ray images. Telehealth technology methods included accessing electronic health records through laptops or iPads; using intraoral cameras; and employing technologies such as the cloud or a computer management system (CMS), which allows for patient data to be entered and stored. The programs using this technology had a high level of efficiency in maintaining patient data, and in accessing consultation and referrals for patients needing additional care.

Incentives

Most programs provided participants with small incentives, such as a "goodie bags" with toothbrushes, toothpaste, and floss to encourage and support home care. Bags for children also included items such as stickers.

See Appendix A for more information pertaining to the programs reviewed for this synthesis summary report.

Logic models

Logic models are graphical depictions of the relationships among the resources, activities, outputs, and outcomes of a program. During the EAs, site visitors worked with program staff to refine logic models depicting the components of the oral health care programs. The logic models for the programs providing preventive oral health care in non-dental settings highlight a commitment to increase access to and availability of preventive oral health care. In all logic model components, terms such as "increased availability" are frequently found, affirming the intention to provide greater access to care than currently exists.

Program rationale or goal: The overall rationale or goal of the nine assessed programs was framed as increasing access to and availability of preventive oral health services for their target populations. All of the programs mentioned providing preventive dental services in settings that are convenient such as Head Start facilities, senior centers, schools, and other venues frequented by underserved populations.

Inputs: Almost all of the programs included funding support through private grants and Medicaid reimbursements as an input. All of the programs also noted other key inputs, such as portable equipment and referral dentists, that facilitate the provision of care in non-dental settings and enable follow-up care for patients needing more than preventive care. In states where legislation authorizes dental hygienists to provide expanded dental services in non-dental settings, this legislation was also included as a necessary input for meeting the goal of increased accessibility by allowing the full extent of allowable services to be provided at non-dental sites. Additional inputs that all of the programs listed include staff, data collection systems, partners, and stakeholders. Each of these inputs plays a key role in establishing care in non-dental settings.

Activities: All of the programs used dental hygienists to implement preventive oral health services. An accompanying activity, establishing partnerships or agreements with dentists, often was included as an activity because all of the programs must be implemented under the supervision of a dentist either on- or off-site. Establishing collaborative relationships with the staff of the host sites was listed as a critical activity that not only supported program startup at the respective sites, but aided program operation, including obtaining consents and following up with patients who needed care beyond what the program could provide.

Outputs: All of the programs included outputs under the programs' control that should increase access to preventive oral health services. The outputs included an increased number of sites where services are offered, a larger number of patients enrolled, a greater amount of preventive services provided, and a larger number of referrals distributed.

Outcomes: An important aspect of the logic models are the short- and long-term outcomes that were defined. The short- and long-term outcomes in the programs' logic models included specific mention of improved access and improvements in oral health status that should result from care being located at venues frequented by the target population. The outcomes included increased access to oral health education; increased access to oral health cleanings; fluoride varnish or treatment and sealants; increased referrals to restorative care; decreased tooth decay; and linkage of patients' children to a dental home.

Impact: The programs noted an expected impact of increased access to comprehensive oral health care resulting in the elimination of oral health disease, improved quality of life and increased societal prioritization of oral health care. Notably, the logic model components that led to these long-term impacts did not assert the provision of care in non-dental settings as a stand-alone strategy. All the program logic models also included referral to dentists when the care needed went beyond what the site could provide. In this way, providing preventive oral health care in community-based non-dental settings is presented as a point of entry into dental care, followed by holistic dental care as needed.

Results

PLAUSABILITY

All of the programs shared the logic that increasing access to preventive care lowers the adverse outcomes of poor oral health, including decay, the need for restorative care, and dental-related emergency room visits. For each program, it appeared that the theory of change portrayed in the logic model was plausible in that the inputs, activities, and outputs should lead to the intended short- and long-term outcomes and have the desired impact. The programs shared with the site visitors available data or strong anecdotal evidence underscoring that the interventions were fully implemented and plausible.

Based on the underlying program logic, site visitors assessed that all nine programs could plausibly increase access to preventive oral health services by establishing services directly in settings that are frequented by and convenient for underserved populations. Further, with increased access to preventive oral health services in these non-dental settings, the target population's use of these services plausibly would increase.

Program plausibility was felt to be stronger when data supported the program's claims of increasing access. For example, one program had collected a large amount of data regarding past and current services. It was able to report that, for the 2004-2005 school year, it provided services at one school, screened 134 children and sealed teeth for 95 children. However, during the 2011-2012 school year, the program provided preventive oral health services in 17 schools; provided oral health education sessions to 2,692 children; and provided preventive oral health services (e.g., screenings, sealants, and fluoride varnishes) to 2,065 children. Another program had data to show that completion of treatment among Head Start students in the target area rose from 8 percent in 2007-2008 to 64 percent in 2008-2009.

Program plausibility was further increased through the implementation of preventive oral health care procedures that have scientifically been proven to be effective in reducing tooth decay among children and senior adults. Although these procedures could be part of any dental care plan, making them available in non-dental settings where the target population is already present is a key innovation because it is assumed that the patients seen would not have received these services if they had not been provided at the non-traditional dental sites.

Such services included:

- Sealant treatments for children in the 2nd and 6th grades, since first and second molar eruptions take place during these school years. Sealant retention checks are then completed during the 3rd and 7th grades.
- Screening and fluoride varnish applications and fluoride treatments to prevent tooth decay, increase early detection of decay, and decrease the number of active decay cases.

Another strong factor contributing to program plausibility was the establishment of referral systems and relationships with local dentists for urgent and restorative care. As mentioned earlier, for patients that already have significant oral disease or decay, screening in non-dental settings is a potential point of entry into further care. Since the target populations for these programs are all underserved in regards to oral health care, a significant percentage will need restorative care. The referral networks these programs have instituted increase plausibility by making preventive care not only more effective, but by preventing even more severe disease. For example, in one program, operators refer seniors to local dentists who have agreed to serve as referring dentists and offer their services to these seniors at a lower rate. Once referrals are provided, the program operators confirm whether the referred services were completed upon the senior's recall appointment. In another program example, a dental hygienist organized a referral network of 10 dentists in the community who agreed to take one child per month without insurance or the resources to pay for care, creating 100 slots per year for dental care for children who might otherwise not be able to access restorative care services.

Workforce innovations also increased program plausibility. In non-dental settings providing preventive oral health care, training or certifying dental hygienists to provide services and manage patients furthers service delivery. For example, dental hygienists screen a large number of children in schools and are able to determine which children need further care. If the hygienists are licensed to provide this care on-site, the children are more likely to access it. Furthermore, in at least one program, hygienists are trained and legally able to apply ITRs to decayed teeth. This expansion of traditional workforce roles to deliver care in non-dental settings enables children to access dental care in a familiar setting and to be relieved of pain until they are able to seek restorative care, which may increase the chance that they will complete the restorative care appointment.

In addition to factors increasing plausibility, there also were several common threats to plausibility across the programs. Some programs struggled with having a viable reimbursement structure if Medicaid reimbursement rates in the state were very low. Some programs were challenged by legislation that limited their ability to expand either their use of dental hygienists or their use of telehealth technology. Additionally, among many of the programs that implement services in multiple sites across a large geographic region, no data collection system was in place to monitor whether the program was being implemented consistently across the sites. Lack of consistent monitoring can make it difficult to assess whether program components are contributing to desired program outcomes. For example, one program is delivered at 13 sites. However, because data collection is minimal, the program administrators cannot determine the overall results of the program and how they are being achieved. Although the underlying logic of the program model is plausible, plausibility could not be affirmed with data. This may also make it difficult for the program to take advantages of opportunities for grant funding or changes in dental care coverage that may come with the Affordable Care Act.

FEASIBLITY OF IMPLEMENTATION

All nine programs were found to be feasible. Key factors in maintaining program feasibility included financial resources, using an expanded workforce, having effective program staff, and making use of supporting tools and supplies.

Financial Resources

Reimbursements from public insurance programs, a key funding source for oral health care for low-income children, were not consistently accessed by these programs. Although several were successfully billing Medicaid for services provided to children in non-dental settings, others faced barriers to doing so. It appeared that for some programs, the process of billing Medicaid outside of a stationary practice is challenging. In one state, the program had not been able to obtain billing access with one of the state's main Medicaid providers. Other programs relied on a third party to complete Medicaid billing that charged them a fee and required paperwork that was time-consuming. Additionally, services that could be provided by dental hygienists in non-dental settings are not reimbursable by Medicaid in all states, so some programs had very limited ability to provide those services.

Challenges in Medicaid and Medicare reimbursement present a barrier to the feasibility of increasing access to preventive and restorative care for certain child and adult populations. In many states, Medicaid reimbursement does not exist for adult populations, except for certain emergency procedures, and Medicare only covers specific emergency procedures. One program that serves seniors established out-of-pocket fees for basic preventive and restorative dental services, all under $125, with payment plans available as needed. However, if patients cannot pay, they cannot access services. Additionally, while programs serving children have established referral networks of dentists for children needing urgent or restorative care, some disclosed that there is sometimes more need than there are available appointments due to shortages of dentists in certain geographic areas or few dentists that accept Medicaid.

Overall, the programs have been successful in providing access to care and have developed strategies for maximizing financial resources, including the following:

- Seeking grant funding to cover services that are not Medicaid-reimbursable. For instance, one program obtained grant funding to pay for RDHAPs to provide ITRs, which are not Medicaid-reimbursable. Some programs engage multiple staff in grant writing to make up for the lack of development staff. Staff members also identify new community sites that will be established if funding is awarded.
- Creating a system for accurately and consistently billing Medicaid. By designating a specific staff member who is solely responsible for completing all Medicaid billing forms, other project staff can focus on providing care to patients.
- Partnering with local FQHCs to fill gaps in services. One project was no longer able to provide services at all of the elementary schools where sites were originally established due to a reduction in federal grant funding. To maintain the services, the program established a relationship with a local FQHC so that there would not be an interruption in dental services for the children at the affected schools. All of the children were referred to the FQHC, which agreed to provide services to the students at the local FQHC clinic.

■ Engaging program partners to help ensure financial sustainability by leveraging relationships with local businesses and influencing community members. Community members and partners have identified additional funding opportunities as well as new sites that might become part of the program during future expansion.

Expanded Workforce

Financial resources alone did not guarantee feasibility. The feasibility of full implementation was also associated with the availability of workforce to provide newly adopted interventions. Legislation plays a key role in the feasibility of preventive oral health care programs that are delivered in non-dental settings. The amount and level of services that can be provided at these sites is highly dependent on legislation governing whether dental hygienists can practice at the top of their license or be certified to fill new roles when providing care at non-dental sites without the direct supervision of a dentist, and to have the care be reimbursable. Feasibility for these programs is directly tied to laws in each state governing what can be done, and by whom, at non-dental sites.

Program staff members were also involved in linking patients to accessible and affordable referral services for urgent or restorative care, representing another expansion of traditional roles that increased the feasibility of providing care in non-dental settings. For example, the dental hygienists associated with one senior center program established referral relationships with local dentists who not only were experienced in providing care to seniors, but were willing to offer payment plans and discounted rates. In many other programs, dental hygienists took on expanded roles by acting as patient navigators and case managers. Legislation often governed workforce expansion, particularly for dental hygienists. Legislation that was passed or at risk of being revoked affected the provision of dental care in non-dental settings since such a large amount of it is provided by dental hygienists.

The expanded workforce also facilitates cost-effectiveness, which is important for feasibility. For programs that provide screening and preventive care to large numbers of patients, particularly in schools, the cost of having dentists conduct all of these services would be prohibitive, particularly if all of the services are not fully reimbursable through Medicaid or other public insurance programs.

Effective Program Staff

Having staff members trained to work in non-dental settings is a critical factor in increasing feasibility of implementation for these programs. It was observed during the EAs that all of the programs are supported by dedicated staff members who are fully committed and highly invested in implementing the program services that will aid them in achieving their program goals. When program administrators were asked about strategies for recruiting, training, and retaining such committed individuals, they responded that the program staff believed in the program and were interested in contributing to the reduction of oral health disease among the target population. Some programs hired staff members who were specifically trained in providing dental care in public health settings, including dental hygienists who were trained to provide expanded services without the physical presence of a dentist.

Supporting Tools and Supplies

Program feasibility also depended on establishing various supports crucial to the delivery of services in non-dental settings.

Nearly all programs used some form of the following:

- Memoranda of Understanding (MOUs). Each program established MOUs with host sites. MOUs increase each program's feasibility by creating formal space, schedules, and guidelines for effective implementation of the program at each site.
- Risk assessment tools. All of the programs require that some form of risk assessment be completed so that the dental provider can determine what dental services are needed. This is important in seeing patients without an established dental history and assures that the appropriate services are provided to each patient. Some programs use the CAMBRA tool or developed their own tool based on the CAMBRA.
- Consent forms. Each program requires that the patient, or the patient's parent or legal guardian, sign a consent form. In addition, one program serving seniors requires that a medical clearance form be completed by the patient's general physician prior to service. The consent form helps recruit the target population, and in the case of children, it can raise parental awareness of the need for dental care, especially for very young children.
- Portable equipment and supplies. Because all of the programs described in this synthesis report are offered in non-dental settings, program staff members needed to be able to easily access and transport all materials needed to provide preventive oral health services.

POTENTIAL IMPACT

Site visitors assessed the programs' potential impact on increasing access to preventive oral health care based on the extent of implementation, process and outcome data shared by the programs, and feedback from stakeholders. Most programs had formal and anecdotal data that helped validate the potential impact of their programs.

The sites collected formal data on a number of program components. Specifically, programs collected data on the number of individuals that received care, the number of services administered, the types of services provided, and the number of referrals provided. In addition, programs collected demographic data (e.g., race, ethnicity, age, zip code, and dental insurance status). Most sites were able to provide this basic data as evidence of the impact of their programs, demonstrating that they were successful at increasing access to preventive care, including reaching a greater number of sites and serving more patients over time. Programs that were not able to provide demographic data had more general data showing new sites reached and numbers of patients, but they did not have data on procedures or demographic data, primarily because there were no requirements to collect such data by funders or governing bodies.

Other reasons cited for challenges in collecting and analyzing data included limited staff time and lack of staff trained to collect, enter, or analyze program data. Additionally, providing care in non-dental settings can increase programmatic responsibilities—including site scheduling, coordination, and follow up—leaving little time for data analysis. Several programs are attempting to identify additional funding for new staff that can support the program and the data collection activities so that the program's impact can more clearly be documented.

Systematic Screening and Assessment of Workforce Innovations in the Provision of Preventive Oral Health Services Project

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Anecdotally, program staff mentioned that the workforce innovations adopted by their programs allowed for greater impact in providing care to target populations. Specifically, all programs have dental hygienists (some with extended practice licenses) who provide preventive services while working in collaboration with a dentist. Some dental hygienists work with a dentist who is on-site, while others work collaboratively with a dentist using telehealth technology or in an off-site supervision model. By having dental hygienists provide the services, programs are able to reduce costs associated with preventive oral health services and reach an increased number of patients, which increases impact.

One area often lacking data to address impact was follow-up care. While all of the programs reported that referrals are made for restorative care as necessary, none had systems to collect data on referral appointment attendance. Case managers and patient navigators often kept notes on follow-up appointment attendance, but there were no formalized tracking systems for collecting these data due to limited staff time and a lack of financial resources to create such systems.

REACH TO TARGET POPULATION

All of the programs were developed to improve access and oral health by providing care in non-dental settings. Through establishing sites for preventive oral health care directly in settings already frequented by underserved populations, individuals can receive preventive services such as oral health and hygiene education and instruction; nutritional counseling; fluoride varnishes; sealants; prophylaxis; and referrals for follow-up and restorative care, facilitated by patient navigation and case management if necessary. Establishing available care in non-dental settings provides some level of "automatic" reach. However, many programs found that they could increase reach to their specific target populations and communities through implementing the following strategies.

Outreach and Recruitment

Outreach and recruitment strategies for programs that serve children increased reach not only by informing parents about the program and its accessibility, but by addressing questions or concerns that parents may have about dental services that are not provided in a dental clinic. Additionally, parents of very young children are sometimes unaware that dental care should start early.

Sites employed several specific strategies:

- At Head Start sites, the dental program staff worked collaboratively with Head Start staff to recruit children actively as their parents enrolled them in the Head Start program.
- Staff from school-based programs attended school open houses, health fairs, and Parent Teacher Organization (PTO) meetings, and distributed informational flyers and informed consent forms to all parents throughout the school year.
- Many of the school-based programs also advertised their services in school newsletters and PTO flyers.

For programs serving senior adults, the dental hygienists developed program flyers and worked with the senior center staff to determine where to post them so that they would be seen. The program administrator also worked with the local newspaper to advertise the program services because a large number of senior adults read the newspaper daily. Information packets, kept at the front desks, were provided to those who were interested, including the program flyer; dental hygienists' contact information; an informed consent form; a medical clearance form; and an informational sheet on oral health hygiene practices that is tailored to senior adults.

In addition, many of the programs emphasized the importance of expanding their services to additional sites as a means of increasing their reach. One program expressed the desire to expand their program to long-term care facilities that provide housing for adults with disabilities. Another program is currently providing services in seven of the 10 elementary schools within its local school district. Program staff are interested in expanding their services to the remaining three schools, so that they are providing preventive oral health services in all of the elementary schools in their district. To expand services, both of the programs are currently seeking additional funding support that will allow them to hire and train additional staff. The programs are also beginning to assess the needs of the sites they would like to expand to determine the population's specific oral health care needs. By taking preventive oral health services to a new facility, the programs will be able to increase the population's access to care.

Retention

At sites where multiple appointments are provided, retention strategies assist in maintaining reach once it is achieved. At Head Start programs, dental program staff members work with Head Start staff to assure that parents are reminded of recall appointments. Because one Head Start program offers preventive oral health services three times per school year, the dental program staff members work directly with Head Start staff to establish when recall appointments should be scheduled.

Another retention strategy is assuring that referral appointments are kept. This is especially important in terms of reaching target populations because addressing urgent and restorative care needs impacts the benefits of preventive care. Some programs arranged transportation for patients to attend their referral appointments, while others provided intensive case management to assure that the care was accessed.

Other programs retained patients by expanding their workforce to be more culturally and linguistically appropriate for immigrants and limited English-speaking populations. By hiring translators and dental providers from target communities, parents gained an increased sense of confidence in consenting to treatment of their children in non-dental settings.

Many of the programs had specific data that documented reach to the target population. Head Start and school-based programs could report on the percentage of enrollees or students that returned consents, or that completed appointments as well as the number of schools within a school district or other geographic area that became program sites. These data reflect one challenge in reaching the target audience that was noted by several of the programs, which was in obtaining consents and delivering services to middle and high school students. Several programs included this age group in their target population and stated that the rates of consent form return were much lower for these students—for example, an average of 60 percent for middle schools versus 85 percent for elementary schools.

ACCEPTABILITY TO STAKEHOLDERS

Common stakeholders of the programs included both dental policy leaders and non-dental service networks or beneficiaries.

- **Dental policy leaders**: Local dental associations; state government bureaus and regulatory agencies (including state Medicaid programs); dental schools; university dental school administrators; local dentists.
- **Non-dental service networks or beneficiaries:** Parents; children; Head Start programs; senior centers; skilled nursing facilities; residential homes for the developmentally disabled; teachers; school nurses; school and school district administrators; funders; city trustees; community organizations; PTOs.

Acceptability among program stakeholders was high across all of the programs. Most community members, partners, stakeholders, funders, and target populations seemed to appreciate having the program provide preventive oral health services within their respective communities. In fact, one program and the services it provides were regularly featured in the city newspaper, which raised acceptability among stakeholders. Notably, many of the programs included children as stakeholders and spoke of the comfort most children felt in accessing care within school environments and the measures taken by dental program staff to assure that the children had positive experiences.

Several programs took findings from community needs assessments or community surveys and incorporated them into the design of the program, which also increased acceptability to program stakeholders. In addition, many of the programs often hold informal conversations with community stakeholders and program participants to determine if the needs of the target population are shifting over time and to elicit feedback about the program and referral networks. For example, one dental hygienist who provides services at a senior center often asks her patients about their experience with the local referral dentist upon their return for their recall appointment. If the patient reports a bad experience, the hygienist will follow up with the dentist, and determine whether changes are needed in the referral system or the use of that dentist as a referral.

The only stakeholders that appeared not to fully support some of the programs were several local dentists. Many local dentists were supportive, donated both supplies and in-kind services, and joined referral networks for patients needing urgent or restorative care. Some local dentists did not support the programs, however, because they believed that preventive oral health services should be provided only at a traditional dental office, or because they perceived the program as negatively impacting their private practices. To build acceptability among this stakeholder group, program staff members attended local dental association meetings and conferences to raise awareness of the programs' goals and services. Some programs also invited local dentists to program stakeholder meetings and, in some cases, directly asked dentists to be active members of the program as collaborating or referral dentists. For at least one program, these strategies appear to have been effective as it was reported that one local dentist who originally was opposed to the program is considering serving as a referral dentist.

INTERVENTION SUSTAINABILITY

All of the programs appear to be sustainable, and none demonstrated any sign their implementation might be halted in the near future.

Across the programs, a number of factors supported program sustainability, such as the following:

- Stable funding sources. Several programs noted stable sources of funding that would improve their sustainability. In particular, those programs able to receive Medicaid and CHIP reimbursements were able to cover a large portion of their expenses. Many programs also had grant funding or received in-kind support from partner universities or other organizations. One program that served seniors was able to receive payment for most services directly from the seniors paying out of pocket, fully covering provider costs.

- Committed staff, stakeholders, and sites. All of the programs had very low turnover rates, and they recruited staff and stakeholders who were fully committed to the goals of the programs. These dedicated staff and stakeholders contributed to the overall sustainability of the programs by working long hours; completing tasks that supported the programs; and actively seeking out additional funding and resources. In addition, the schools and senior centers in which the programs took place were generally very invested in the programs and actively worked with the program staff to recruit program participants.

- Collaborative relationships with local Federally Qualified Health Centers (FQHCs). A few of the programs established collaborative relationships with local FQHCs, which further improved their likelihood of sustainability. These relationships enabled programs to provide some restorative care services, and in some cases, newly enabled programs to be reimbursed by Medicaid.

Though stable funding was a strength for many programs, this was not the case for all. Some of the programs depended heavily on grant support. Although grant funding is common, some programs expressed frustration with having to continuously apply for grant support, which does have time limits. For example, one program's original demonstration project grant is scheduled to end in April 2014; however, the program has consistently received funding from multiple state and national organizations, and is confident that the program will continue beyond 2014. Viewing grants as less permanent, one program primarily supported by grants shared a cost analysis that concluded it was not self-sustainable because costs far exceeded its limited Medicaid reimbursements—$107,500 to $1,600 in the 2008 – 2009 school year. Another program was unable to get approved as a Medicaid provider because the local payer was not including additional providers. When possible, to try to make their programs more sustainable, some staff explored additional components to add to the programs that could be billed to Medicaid. Examples of these additions included adding fluoride varnishes or sealant services to the programs.

Another challenge to sustainability for a couple of programs was legislation. Staff of one program wondered whether a required transition to being a Coordinated Care Organization would impact funding for dental care. In another case, a program was able to operate using its service model because the legislature had approved an expanded scope of practice for dental hygienists. It was not clear, however, whether the legislature would recommend making that change permanent.

TRANSPORTABILITY OR GENERALIZABILITY

All nine programs feature straightforward designs that could be transportable to other settings or target audiences. Several of the programs mentioned that they are determining whether their services can be provided to other target audiences. For instance, one program is currently providing services to senior adults in local senior centers, but the program staff also hopes to expand the program and begin providing preventive services to adults with disabilities who reside in long-term care facilities.

Some of the programs are implementing innovative approaches that may be transportable to other programs, including:

- Using telehealth technology and electronic forms to provide on-site preventive oral health services. Two of the nine programs use telehealth technology to deliver preventive oral health services in community-based settings. Telehealth technology is used to collect digital photos and X-rays, and to share those images with off-site collaborating dentists to establish dental treatment plans. Telehealth technology can also be used to collect patient data with electronic forms. Five of the nine program use electronic forms to collect patient data. Patient data are collected on-site and the data are linked to the program's database. Programs interested in working with electronic images and patient forms can consider using telehealth technology to expedite the provision of dental services (because patient data can be collected and reviewed quickly by off-site program staff).

- Establishing a referral system that allows for the program staff to know if a referral appointment was attended. Many programs struggle with linking patients to referral care; however, some programs are establishing systems that allow them to close the referral loop. For instance, one program has a staff member that escorts children to the referral dentist for restorative care. The dental appointment is scheduled as a "field trip," and school officials and parents provide consent prior to the appointment. By adding this component to the program, staff members can help ensure that children receive complete dental care. Not all parents consent to this field trip, and some prefer to take their children to their referral appointments. Nonetheless, in cases where parents do provide consent, this program component has been effective in linking children to the referred services.

- Working with state legislators to pass laws that will allow dental hygienists to apply ITRs. A few programs worked to address legislation in their states. Having states support this type of legislation could encourage more programs to treat children and senior adults' decayed or unhealthy teeth until they are able to receive full dental care.

Across the nine programs, one factor was noted that cannot easily be transported to another target audience or site. That factor was each program's champion. Across all nine programs, there was at least one program staff member or partner who was described by a number of interviewees as the program's champion. Researchers asked a number of program staff members what made the program champion so committed and influential to the program. Program staff members stated that the champion was fully committed to the program, and that they continued to go above and beyond the call of duty to ensure the target population received the preventive dental services offered by the program.

STAFF/ORGANIZATION CAPACITY FOR EVALUATION

Staff receptivity to and capacity for evaluation

Staff members interviewed from all programs were interested in participating in a rigorous evaluation and expressed that their organizational leadership would support a program evaluation. Capacity for participation in a rigorous evaluation varied across the programs. For instance, two of the nine programs are directed by university researchers; three others have evaluators or data analysts on their teams whose time could be allocated toward a rigorous evaluation; and other programs were able to identify staff that could assist in some way. One program was not immediately ready to participate in a rigorous evaluation as it is in the process of adopting a data collection system that will allow review of collected data across the various program sites, but currently is unable to report basic program data such as numbers of people served or hygienist operators engaged.

Organizational capacity for evaluation

Many of the programs were already conducting activities that would support program evaluation. For instance, one program recruited a computer programmer from a local university to assist in developing a database so that the staff can begin to review program data. Another program is in the process of transitioning from collecting patient data with paper forms to using iPads for this purpose. By using this new technology, the collected data will be entered directly into the program's database.

One challenge that was presented across some of the programs was related to the number of staff available to participate in a rigorous evaluation versus the demand for staff time to be allocated toward other activities. For example, some programs wanted to expand services to additional sites, which would require staff time. Given their limited number of staff, however, participation in rigorous evaluation while attempting to expand services may not be feasible.

SUSTAINABILITY OF HEALTH EFFECT

The nine programs are all implementing evidenced-based oral health services that should enable long-term sustainability for the health effects provided to the dental patients. Types of oral health care services provided include preventive care, such as screening, fluoride varnish, fluoride treatment, and oral health education, and many also provided prophylaxis, X-rays, sealants, and interim restorative care. Another factor increasing the likely sustainability of the health effect provided by the oral health services was the frequency and regularity of visits. One program included three stationary chairs within school-based health centers, making the use of the program's services very convenient for students to access as frequently as needed. Programs visiting multiple sites visited with a frequency ranging from once a week (increasing the likelihood that dental patients could be seen with appropriate regularity) to once a year. Frequency of visits sometimes was based on recommended intervals of preventive care for young children or host-site requirements, such as for Head Start programs, but visit frequency also was affected by funding and availability of staff.

The greatest concern about sustainability of health effects among the programs was associated with concerns about maintaining the program itself, in cases where programs struggled to attain sufficient Medicaid reimbursement or where programs felt heavily dependent on time-limited grants.

Discussion

EVALUATION POTENTIAL OF PROJECTS

Readiness for Evaluation

Eight of the nine programs appear to be ready to participate in a rigorous evaluation. One of the factors enhancing their readiness is the longevity with which the programs have been implemented, a range of two to nine years. In addition to the length and stability achieved in implementation, all of the programs have been collecting some data that could be used to assess their reach among the intended target population, the extent of their service provision, and to begin assessing outcomes.

Capacity to collect data was another indicator of the programs' readiness for a rigorous evaluation. These eight programs all collect data with either a paper or electronic form. Among the programs that used electronic forms, data entry and monitoring appeared to be more efficient, because the data instantly were uploaded to the program's database. The program data collected could be used to monitor the number and types of services provided, as well as whether referrals were provided to participants.

One of the challenges many of the programs reported regarding their participation in a rigorous evaluation was related to the program staff. Many of the programs' staff members are fully committed to implementing the program activities, leaving little time to work on evaluation activities. Program staff also felt that, to participate fully in evaluation activities, they might need to be trained in the evaluation methods or on any processes that may be proposed for a rigorous evaluation. In addition, some of the sites are in the process of transitioning from collecting data by paper to using an electronic form and database. Because the electronic database will be new for these sites, the program staff may need to be trained in importing and exporting data to support the evaluation.

One program, though not ready for a rigorous outcomes-focused evaluation, would be able to participate in a process evaluation. The researchers noted that while this program has been providing preventive oral health services for over five years, the program staff have not consistently been collecting and organizing program data. In addition, the implementation activities varied across the sites. Specifically, the program is provided across a state by a number of trained hygienists. However, the program administrators have not been able to monitor whether the program is being implemented consistently across the sites. This would make it challenging for the program to participate in an outcomes-focused evaluation, but a process evaluation might provide valuable information for program improvement.

How These Projects Reflect the Literature

The programs reviewed in this synthesis report reflect the literature that reviews programs that provide preventive oral health services in non-dental settings. The programs incorporate dental providers who take preventive dental services into settings such as Head Start facilities, senior centers, and schools. These programs increase children's and senior adults' access to preventive dental care by taking the services directly to settings that are familiar and convenient for the population to access.

A rigorous evaluation of these programs has great potential to address gaps in the literature about ways to effectively provide preventive oral health services in non-dental settings. Specifically, evaluation data on the effectiveness of various methods used to design, implement, monitor, and sustain school-based Head Start, WIC, and senior center programs would be valuable for dental providers interested in offering services in non-dental settings. In addition, an assessment of program models incorporating dental hygiene students and an evaluation of the expansion of dental hygienists' roles would be valuable to dental providers interested in increasing children's and senior adults' access to preventive oral health services.

POTENTIAL EVALUATION DESIGNS

Available data sources from all of the programs reviewed included program registration forms, patient intake and assessment forms, and medical history forms. Some of the programs stored data in a paper or chart format, while other programs entered data into a computer program. Some of the computer programs used include CDC's SEALS, Computer Management System, Dentrix, Denitcon, and Microsoft Excel.

Common evaluation questions across the programs include:

- Overall, what is the effectiveness of the program?
- Over time, are the priority population's health outcomes improving?
- Examples of health outcomes to measure.
    1. Decrease in tooth decay
    2. Decrease in emergency department visits for dental complaints
    3. Increase in the number of sealants applied and retained
    4. Increase in access to preventive (and restorative) oral health care
- How does service provision in non-dental settings improve rates of treatment and dental health outcomes?
- What administrative and workflow activities support the effectiveness of the model?
- What are the long-term oral health outcomes for children treated for urgent issues identified through screening?

In addition, a number of rigorous evaluation designs can be considered for eight programs.

Possible designs are listed below:

- A prospective quasi-experimental study could be designed for some of the school-based programs because many of them offer services at multiple schools within one school district or jurisdiction. For instance, one school can be considered an intervention site, while another school in the district with similar demographics (that does not offer the preventive oral health program) can be used as a matched comparison site. The study could then address evaluation questions such as: What are the oral health outcomes of the intervention school compared with children not enrolled in the program, including rates of caries, rates of sealant application, and rates of urgent oral health care needs? In addition, the academic outcomes could be assessed. For instance, a question such as: What are the academic outcomes of children enrolled in the program compared with those not enrolled in the program?

- A longitudinal study of patient oral health status can be conducted. Data could be used to determine whether, over time, patients who were initially in need of periodontal scaling, sealants, or consultations with a dentist were eventually able to be seen primarily for preventive services. Similarly, a longitudinal study could assess the number of patients who continued to receive preventive-only services over time.

- Cost-benefit analyses or return-on-investment assessments can also be considered in the context of a rigorous evaluation. Program data can be reviewed to assess if the program services are being implemented in a cost-effective manner.

- A provider assessment can be conducted among program staff, partners, and stakeholders that collects their feedback on program implementation strategies, strengths, and weaknesses of the program.

A pre- and post-test study also could be conducted assessing program participants' knowledge, attitudes, and behaviors (KAB) related to oral health care.

Limitations

In preparing this report, the team has attempted to synthesize information learned about innovations that address barriers to oral health care based on-site visitor reports from nine EAs of programs providing oral health services in non-dental settings. The methodology has some limitations. First, given the birds' eye view of synthesizing these programs, the findings may not apply to every program. Second, because programs differed in venue, scope, and level of implementation, aggregate themes do not tell the whole story. Various types of programs target different audiences and are implemented in different settings. Third, the small sample size made generalizations inappropriate. However, an analysis of the EA reports provided a feel for the barriers and strategies programs experienced in working to address the barriers to care. Finally, the data used to compile this synthesis primarily came from site visitors' reports and logic models. Reports were based on a cursory, 2.5-day site visit. While site visitors tried to understand how each program was implemented and challenges experienced in their implementation, the site visitors were not experts on the programs. The amount of information and type of information in the reports also varied, making comparisons across all the programs difficult. Site visitors were asked to provide additional or clarifying information in the reports when possible; differences may be due to the unavailability or lack of data from some programs.

Conclusion

These programs have demonstrated that they can increase a population's access to preventive oral health services by taking the services directly to settings that are convenient for the population. The nine programs included in this report have increased the number of individuals who have received preventive care over the years by offering program services in a setting familiar to the target population.

All of the programs shared the logic that increasing access to preventive care lowers the adverse outcomes of poor oral health, including decay, the need for restorative care, and dental-related emergency room visits. For each program, it appeared that the theory of change portrayed in the logic model was plausible in that the inputs, activities, and outputs should lead to the intended short- and long-term outcomes, and have the desired impact. Program plausibility was felt to be stronger when data supported the program's claims of increasing access. Program plausibility was further increased through the implementation of preventive oral health care procedures that have scientifically been proven to be effective in reducing tooth decay among children and senior adults, such as sealant treatments for children in the 2nd and 6th grades; bi-annual cleanings; and screening; fluoride varnish applications; and fluoride treatments to prevent tooth decay; and increase early detection of decay. Another strong factor contributing to program plausibility was the establishment of referral systems and relationships with local dentists for urgent and restorative care. Workforce innovations also increased program plausibility, as training or certifying dental hygienists to provide services and manage patients furthered service delivery in these non-dental settings.

Eight of the nine programs appeared ready for an outcomes-focused evaluation. One program was not immediately ready as it is in the process of adopting a data collection system that will allow review of collected data across the various program sites, but currently is unable to report basic program data such as numbers of people served or hygienist operators engaged. A number of potential evaluation questions and possible study designs can be conceptualized for these programs. A rigorous evaluation of these programs has great potential to address gaps in the literature about ways to effectively provide preventive oral health services in non-dental settings. Specifically, evaluation data on the effectiveness of various methods used to design, implement, monitor, and sustain school-based, Head Start, WIC, and senior center programs would be valuable for dental providers interested in offering services in non-dental settings. In addition, an assessment of program models incorporating dental hygiene students and an evaluation of the expansion of dental hygienists' roles would be valuable to dental providers interested in increasing children's and senior adults' access to preventive oral health services. In this way, a rigorous evaluation of the various programs would aid the dental community in gaining a better understanding of the types of programs being implemented in non-dental settings and in determining means to make such programs more effective in improving oral health.

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Appendix A

> **Rationale:** *Providing preventive oral health services to children and seniors in settings that are convenient to the target population (e.g., schools, Head Start facilities, senior centers) increases access to and availability of preventive oral health care.*

Inputs	Activities	Outputs	Short-Term Outcomes (~1–3 years)	Long-Term Outcomes (~3-6 years)	Impact
▪ Funding ▪ Partners/stakeholders ▪ Portable equipment and supplies ▪ Internet/WIFI access ▪ Dental providers ▪ Referral/collaborating dentists ▪ Program staff ▪ Site (e.g., schools, Head Starts, senior centers) ▪ Data collection system (e.g., Axium, Access, CMS, Denticon, Dentrix, EHS, Open Dental, SEALS) ▪ State legislation	▪ Engage community and establish collaborative relationships with site administrators and staff ▪ Engage partners and stakeholders ▪ Recruit participants for the program ▪ Provide program model training to program staff ▪ Collect signed consent forms and medical clearance forms ▪ Provide preventive oral health services (e.g., sealants, fluoride varnishes, oral health assessments, oral health educational sessions) ▪ Collect essential information on program participants ▪ Refer participants to dentist for additional services	▪ # of participants recruited ▪ # of signed consent forms ▪ # of sites receiving services ▪ # of participants receiving services ▪ Types of services provided ▪ # of referrals provided ▪ # of services billed to Medicaid ▪ # of services reimbursed by Medicaid ▪ Data collection form/in-take form ▪ Data collection system	▪ Increased # of participants receiving preventive oral health services ▪ Increased # of participants locating a dental home ▪ Decreased # of dental caries ▪ Decreased # of tooth decay ▪ Increased knowledge of good oral health practices ▪ Increased # of sites (e.g., schools, Head Starts, senior centers) participating in the program	▪ Increased provision of preventive dental services for the underserved ▪ Early detection of dental caries and tooth decay ▪ Improved knowledge of good oral health practices ▪ Program expansion (to additional sites across the city/state)	▪ Increased access to preventive oral health care ▪ Elimination of oral health disease ▪ Improved quality of life