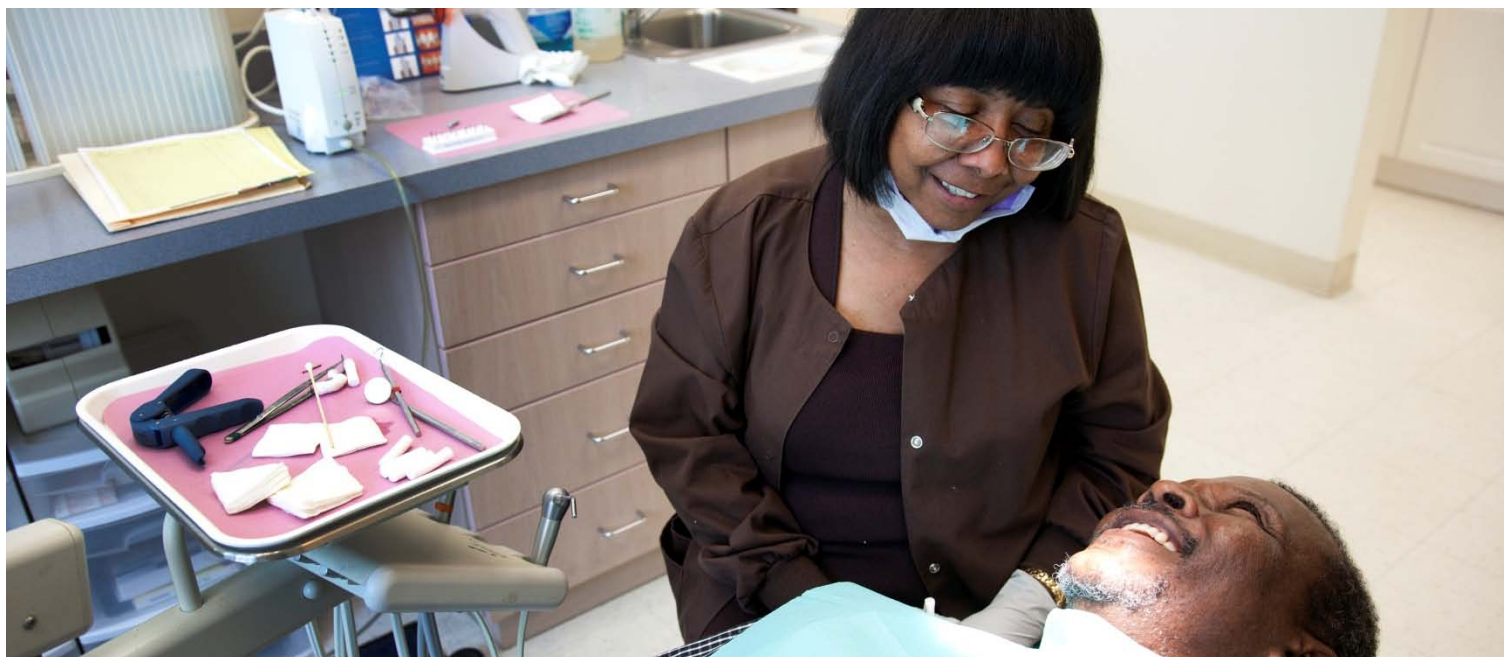Robert Wood Johnson Foundation
Workforce Innovations in Oral Health

Innovations that Address Socioeconomic, Cultural, and Geographic Barriers to Preventive Oral Health Care

SYNTHESIS REPORT
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Innovations that Address Socioeconomic, Cultural, and Geographic Barriers to Preventive Oral Health Care

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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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Workforce Innovations in Oral Health

Innovations that Address Socioeconomic, Cultural, and Geographic Barriers to Preventive Oral Health Care

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 potential replication.

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FOCUS OF THIS REPORT

This report focuses on nine oral health innovations that integrate service delivery and workforce models in order to reduce or eliminate socioeconomic, geographic, and cultural barriers to care. Two additional reports in this series describe the remaining programs that provide care in non-dental settings and care to young children. 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 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 their 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;
- 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 that have potential for rigorous evaluation that 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

Poor access to oral health care is complex and often requires solutions that address interrelated barriers and take into account not only the availability of care and an economic means to access, but the willingness of patients and communities to use the services (Guay, 2004). The programs examined for this synthesis report are all implementing innovations that address multiple barriers to care, including those that are socioeconomic, cultural, and geographic. Moreover, most have some element of community engagement or empowerment to address the concerns of both providers and the target population in regards to accessing dental care, specifically focused on increasing the use of preventive care services and adoption of preventive care behaviors.

When comparing children living in poverty to those who do not, research shows that low socioeconomic status is associated with tooth decay and other dental problems (Guay, 2004). For example, children from low-income households have more than two times the amount of dental caries than children who are not from low-income households (Dye, 2010). One of the major causes of this disparity is receiving fewer dental services, particularly those that prevent decay (Stanton and Rutherford, 2003); 35 percent of children eligible for Medicaid/CHIP received preventive dental services in 2010 (Centers for Medicaid and Medicare Services, 2011). When parents of children who do not access preventive care do not receive education on oral hygiene and nutritional practices, there is less likelihood that they will adopt risk reduction behaviors that can reduce tooth decay among their children (IOM and NRC, 2011).

Another factor contributing to low rates of oral health care access and utilization among low-income children is the shortage of dentists who will accept Medicaid and other public insurance (U.S. Department of Health and Human Services, 2002). The shortage of such dentists especially impacts individuals of low socioeconomic status living in inner-cities and residents of rural areas (Guay, 2004). Furthermore, access and availability not only intersect with poverty and geographic distance, but with race and ethnicity (Guay, 2004). A striking example of this confluence of barriers occur in some American Indian and Alaska Native communities of low socioeconomic status located in remote areas that lack dental providers and the means to travel long distances to access care.

Poor oral health is often attributed to factors and behaviors related to cultural practices and beliefs such as putting infants and young children to bed with baby bottles. However, there is not a great deal of research that specifically isolates these cultural factors from the confounding variables of poverty or lack of knowledge (Butani, 2008). Some studies show that acculturation and language may play a role in accessing dental care for some groups of Asians, Pacific Islanders and Latinos (Butani, 2008), and that access improves with acculturation and learning English. The experience of specific racial or ethnic groups combined with socioeconomic factors may contribute to poor access to care. For example, Asian immigrants who have lived in the United States for less than five years have less access to oral health care (Qiu and Ni, 2003), which may be attributed not only to language barriers, but to low income. Thus it is possible that what are named as cultural practices that lead to tooth decay may actually be significantly interwoven with poverty, lack of access and a resulting lack of education about preventive oral health care.

The intersection of all of these barriers may result in avoidance of dental care that can become generational, so that prioritization of oral health only occurs with the onset of an acute problem; this results in illness and the increased expense of emergency room visits. Lack of accessibility combined with lack of prioritization of oral health thus requires a response that is multifaceted. In the 2011 report, "Improving access to oral health care for vulnerable and underserved populations," the IOM and NRC assert that "*Improving access to oral health care will necessarily require multiple solutions that use an array of providers in a variety of settings*" (IOM and NRC, 2011). The report also outlines a holistic approach for overcoming barriers to oral health care that affect underserved populations, including providing oral health services in a variety of settings; an expanded, multidisciplinary oral health care workforce; compensation and authorization for this workforce; and a continuum of oral health care that span the health care system (IOM and NRC, 2011). These strategies address the re-engagement of populations disconnected from oral health care services by establishing non-traditional settings that are welcoming and convenient as well as involving other segments of the health care system that may have more interaction with these populations. In addition, expanding the number and type of providers enables new roles for the dental workforce in providing preventive care and conducting community-based, culturally relevant education and outreach to integrate oral health into the perception of individual and community health.

The programs described in this report have integrated components of the recommendations made by the IOM and NRC as potential solutions to barriers to access that have existed for a long time. These programs are designed to address three types of barriers to care—socioeconomic, geographic, and cultural—and most integrate strategies that address multiple barriers, recognizing the need to address the intersection of factors that prevent access to care.

Methods

SYSTEMATIC SCREENING

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.

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. Two other reports in this series describe the remaining programs, including workforce programs that provide preventive care to young children (infants and Women, Infants, and Children (WIC) participants) and dental providers in non-dental settings.

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 that it accurately reflected the program. Components of the logic model are described in greater detail below, and Appendix A contains an example of a general logic model for innovations that address barriers to oral health care.

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, researchers conducted evaluability assessments of nine oral health programs using innovations that seek to overcome barriers to accessing preventive oral health care. The programs include those that provide oral health services directly as well as those that are focused on training and technical assistance. All of the programs prioritize increasing access to preventive oral health care to low-income children among other populations.

ADDRESSING SOCIOECONOMIC BARRIERS

- Of the nine programs, all sought to address socioeconomic barriers by increasing the delivery of Medicaid-reimbursable preventive services, or increasing the availability of services to Medicaid-eligible children. One program provided an inexpensive preventive service that was non-reimbursable to children within a capitated Medicaid system, so that there was no loss of revenue. Several programs also provided preventive services to children without Medicaid, covering the cost by modest profits from Medicaid reimbursements.

- Two programs offered incentives to dental providers to see more children, especially children under 6 years old and those with Medicaid. The incentives included creating enhanced Medicaid reimbursement for preventive care and having designated staff take responsibility for raising appointment show rates through providing follow-up and arranging transportation for children with Medicaid who received appointments to see dental providers.

- Seven programs provided services when and where none were previously available, either by establishing dental clinics in specific communities; establishing alternative sites for preventive and restorative care at schools, homeless shelters, through mobile units and other settings; or by having dental providers, including dental hygienists, provide preventive care when no Medicaid provider could be identified. Overall, all programs sought Medicaid reimbursement when it was feasible under state guidelines, but still provided preventive care for services such as sealants and fluoride varnish even when reimbursement was not possible.

- Eight programs specifically sought out Medicaid-eligible children through contacting families from lists provided by Head Start, social services programs, or dental and medical providers encountering children for whom care could not be provided due to insurance status. One of these programs secured appointments for children with Medicaid in areas with few dentists who accept Medicaid.

ADDRESSING CULTURAL BARRIERS

- Eight programs targeted children (and their families) from communities with a history of poor access to dental care, including immigrants and communities of color—particularly black, Latino and American Indian communities.

- In addressing cultural barriers to accessing preventive oral health care, five programs used strategies such as providing or arranging translation; training or employing workforce members from target communities; creating clinic spaces that were culturally relevant in decor; and tailoring outreach and education materials in language and images.

ADDRESSING GEOGRAPHIC BARRIERS

- Two programs used portable dental services—either on a mobile unit or by establishing portable dental care sites—to bring both preventive and restorative services to communities without local access to dental providers that accept Medicaid, reducing the need for long distance travel in order to keep appointments.
- Five programs established preventive services, such as screenings and sealants, at schools, WIC programs or Head Start centers especially in communities where dental clinics required that families travel a significant distance to keep appointments.

In addition to addressing the above barriers, eight programs implemented strategies aimed at engaging both individual patients and communities from their target populations. This type of innovation increased the acceptability of preventive oral health behaviors, reduced stigma associated with having children with poor dental health, and engaged parents and families in adopting preventive oral health practices. Patient-centered strategies included training their own staff or staff from local programs in motivational interviewing, which engages the dentist to work with patients and their families towards incremental behavior change, and knee-to-knee exams (a technique for conducting an oral health exam where the parent or hygienist holds the child in a comforting manner) to increase the comfort level of children and their parents during appointments. Community- level strategies included creating child-friendly space and welcoming space for specific cultural groups. Other community-level strategies included increasing the comfort of dentists and their staff in working with very young children, thus adding to the pool of dental providers available to see children with Medicaid and other public insurance. One program addressed the fear of dentistry that can develop in populations with historically poor access to oral health care by implementing a silver nitrate application protocol so that a painless, non-invasive technique of arresting dental decay would be available.

Logic models

Almost all of the logic models of innovations include statements that highlight a commitment to reach beyond providing clinic-based care in order to target and address barriers to care.

The special needs of populations with poor access are validated in how the logic models were presented, as follows:

Program rationale or goal: The overall rationale or goal of all programs was framed as increasing access to preventive oral health care for underserved and high-risk populations. Over half of the programs mentioned addressing specific barriers to access for specific populations, such as socioeconomic barriers (Medicaid recipients and low-income populations), cultural barriers (immigrants), and geographic barriers (populations that need to be served in settings that are convenient to them).

Inputs: Specific to reaching patients of low socioeconomic status, two programs included Medicaid support as an input, and one included Medicaid-covered clients and alternative dental workforce, acknowledging the cost-effectiveness of using mid-level providers. Legislation that authorized new workforce approaches and allowed nonprofit organizations to provide dental services was also included by several programs as an input that could increase reach to populations with socioeconomic barriers.

Other programs included inputs such as collaboration with the community and culturally aware staff.

Activities: All of the programs listed at least several activities that imply an awareness of socioeconomic, cultural, and geographic barriers that require expanded efforts to re-engage the target communities. Partnerships to provide off-site screenings; education and preventive care; case management; outreach to generate and coordinate appointments; and patient navigation stand out as strategies that increase engagement. One program listed the sponsorship of community events and disseminating a book about oral health written by its pediatric dental patients as a way to increase the community's awareness of the importance of good oral health habits. Workforce innovations, such as cross-training of staff and allowing the dental providers to work at the top of their license, were also listed as activities by several programs.

Outputs: Programs included outputs that increase access, including referrals from community-based providers; type of providers providing fluoride varnish; treatment and reimbursement for fluoride varnish; amount of outreach; number of Medicaid recipients; community education efforts; and culturally aware practice. One important aspect of many of the logic models that can be seen in short- and long-term outcomes was the inclusion of engagement of the target populations and communities. The short- and long-term outcomes included specific mention of population-based change, such as increased community access to oral health education; improved oral health literacy; community prioritization of oral health; decrease in dental phobia; improved quality of dental care for children with Medicaid and other public insurance; and ease of access for patients.

Impact: The expected impact of the programs also focused somewhat on a larger change in practice that allows strategies for addressing specific barriers to care to become standardized. These included increased access to Medicaid, a change in expectations of the quality of care received among patients that come from groups with historically poor access, and an increase in the number of providers practicing at top of their license. Even more striking were impact statements regarding the effect of the program on populations with poor access, including that these communities will have higher expectations of the oral health care they receive and become an "empowered population" as a result of using the program.

Results

PLAUSABILITY

All of the programs were based on 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 intended flow portrayed in the logic model was plausible in terms of inputs, activities, and outputs resulting in achievement of stated short- and long-term outcomes and potential impact. The programs shared available data, strong anecdotal evidence, or available theory that underscored that the intervention was fully implemented and plausible.

Based on the strong plausibility of the underlying program logic, eight of the programs were determined by site visitors to be plausible, and one was determined to be somewhat plausible. To a large extent, the strength of plausibility of these programs depends on the development and adoption of innovations that respond to very specific needs of populations with poor access to care. These innovations were often alternative approaches to traditional models of care. For example, among the programs found to be plausible, five programs specifically addressed the shortage of dental providers, caused either by geographic distance of dental services from where patients live, or by a lack of willingness of local dentists to see children with Medicaid. Traditionally, providers who accept Medicaid can only bill for certain services and may not be fully aware of the extent of services for which they can bill, or may not be able to bill for preventive care.

To reduce this shortage, programs incorporated a variety of strategies, including:

- Incentivizing providers to accept Medicaid through enhanced reimbursement codes for preventive services provided to children, and providing training and technical assistance in becoming a Medicaid provider. One program that did this saw a resulting 371% increase over a six-year period in preventive and other dental visits by children 12 months or younger;
- Establishing dental clinics in areas with high numbers of Medicaid-eligible children and very few dentists;
- Recruiting and training dental workforce from remote areas to serve their own communities.

Other programs adopted workforce innovations that changed traditional structures by using the workforce in new ways, and creating or working to license completely new positions within their state. Four programs expanded the use of dental hygienists and dental assistants to provide fluoride varnish, sealants, and dental screenings without direct supervision of a dentist at Women, Infant, and Children (WIC) programs, Head Start programs, and schools. Most of the programs trained hygienists and dental assistants to deliver services in new ways, such as using knee-to-knee exams with young children and applying silver nitrate to arrest tooth decay. In these and other programs, hygienists, dental assistants, and dental coordinators worked in new roles as patient navigators and advocates, arranging transportation; translation; providing case management; and even encouraging dentists to offer more appointments for children with Medicaid that needed restorative and follow-up care by assuring that referred patients kept appointments. Some also provided screening at schools and other sites or established new sites at non-traditional venues, such as in a diabetes clinic at an Indian Health Service site.

In terms of workforce development, the training or employment of dental therapists, dental health aide therapists (DHATs), primary dental health aides (PDHAs), and community dental health coordinators (CDHCs) was intended to increase access by allowing staff to outreach to underserved populations and to provide more preventive services, and in some cases, restorative services, at a lower cost. One program used health educators to conduct caries risk assessment (CRA), provide hands-on oral health instruction to the entire family, and assist families in selecting goals for improved oral hygiene. The training or employment of new workforce increased the plausibility of the underlying program logic by increasing the likelihood of achieving short- and long-term program outcomes, including the program's ability to provide more preventive services in new venues, thus lowering the effects of poor oral health.

The challenge of integrating workforce innovations into teams and settings with a more traditional oral health workforce structures somewhat lowered plausibility for one program. The program aimed to increase the reach of the dental provider team by oral health training to community health workers who would both conduct outreach and provide preventive oral health care within community health centers and at community-based, non-traditional sites. Although the training model was plausible, many initial trainees were not community health workers and were unable to use the full breadth of their training when they returned to their communities due to licensing restrictions; lack of reimbursement for preventive services not delivered under direct supervision of dentists; and their workloads at their current organizations. However, many of the newly trained coordinators were able to conduct outreach and several established new screening and preventive care sites.

Other factors contributing to program plausibility were the use of alternatives to traditional methods of delivering care, such as involving parents and families to change their perception of oral health. For example, programs adopted strategies such as motivational interviewing and knee-to-knee exams, both of which elicit patient and parental involvement. The program that used health educators to work with immigrant families provided education and instruction to the whole family to decrease caries risk in the children. For example, health educators conducted a hands-on education session on tooth brushing for the entire family. Translators were present for families in need of their services. These interventions are patient-centered, and program staff reported that they decreased stigma by increasing knowledge; improving receptiveness to learning oral health preventive care practices; increasing risk reduction behaviors; affirming the role of the patient and parent in improving oral health in incremental steps; and contributing to achieving better health outcomes.

FEASIBLITY OF IMPLEMENTATION

All of the programs were rated as feasible, although in most cases, it was pointed out that feasibility was based on the continued availability of financial resources. Specifically, feasibility is strongly associated with reliance on the improvement or continuation of Medicaid reimbursement, or the potential of preventive services to be reimbursable or included as part of the package of capitated services. For example, programs were able to take advantage of enhanced Medicaid codes; assistance in billing Medicaid; additional revenue for preventive services such as fluoride varnish; and a higher number of Medicaid providers.

For several programs in which the innovation included establishing new Medicaid dental provider sites in geographic areas where there were none, staff raised that continued feasibility may be affected by the Affordable Care Act if Medicaid structure is changed to the disadvantage of providers who see mainly patients with Medicaid. For one program that relies on grant funding, combining grant-funded education services with Medicaid reimbursable services was one option to keep the program feasible. A program operating in a state with a capitated Medicaid program added a very low cost intervention to stop the advancement of decay—the application of silver nitrate—and offered it to all pediatric patients.

However, 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. In many programs, an adequate number of hygienists and dental assistants were needed to assure the availability of preventive oral health services independent of dentists. One program felt that the success of its model was evident by the six- to nine-month waiting list that occurred as word of the program spread. To meet this demand, more non-dentist workforce members, such as dental hygienists and dental assistants, were trained to do knee-to-knee exams. However, the effectiveness of this strategy was limited by the fact that the training was provided by a sole dental hygienist without a written training curriculum.

Programs employing newer workforce models such as dental therapists, DHATs, PDHAs, and CDHCs directly linked the feasibility of these providers to their cost-effectiveness. They also enabled the programs to continue to meet current demand and to expand into areas where new sites were being requested, mostly due to geographic access issues. In addition to the lower cost associated with service provision by mid-level, non-dentist providers in comparison to dentists, three programs and their stakeholders also mentioned their appeal to patients and communities with historically poor access. Some mid-level providers were described as "less threatening," "one of our own," and more child-friendly. In addition, some mid-level providers' delivery of preventive and restorative procedures allows dentists to practice at the top of their licensure and scope of practice by focusing on the most advanced restorative care. This increases the feasibility of program implementation by increasing demand for the services that the new workforce members are trained to provide.

It was also noted that the lack of political will may affect the feasibility of using expanded workforce in some states. Although collaborative practice agreements can be established to allow a wider variety of procedures to be conducted, as this expanded workforce model has been more widely used, there has been pushback. In some instances, there have been changes or attempts to change the laws affecting scope of practice—a concern that the practice of dentists will be threatened has risen (IOM and NRC, 2011). For at least three programs, this has resulted in temporary suspension of interventions as they were intended to be implemented; limitations in reimbursement for preventive services; or continued barriers to access when children can be screened at venues such as schools, but must travel to clinics for preventive care. To continue towards full program implementation, two programs have become involved in legislative advocacy.

The ability and flexibility of the oral health care workforce, including dentists, to adopt new techniques and work in multifaceted roles also plays a role in feasibility. Five programs expanded the roles of the existing workforce by training hygienists to provide new types of preventive care (e.g., silver nitrate application, knee-to-knee exams and conducting CRA), and to assist patients in obtaining appointments with dentists for follow-up care; arranging transportation and translation services; and providing other care coordination and case management services.

In areas that lacked pediatric dentists, one program not only asked dentists to see children, but provided training in non-traditional techniques such as motivational interviewing. Two programs also attempted to involve medical providers in oral health care with varying success. In one of these programs, pediatricians were reminded that in that state, they are eligible for Medicaid reimbursement for fluoride varnish application and encouraged to access the training in this procedure as well as technical assistance in billing Medicaid. This "stretching" of traditional roles could have increased feasibility of the program's interventions by addressing barriers to access associated with geographic, socioeconomic, and cultural factors. However, very few pediatricians responded with a request to be trained in the procedure and how to access reimbursement for providing it.

One other commonly identified activity that influenced feasibility was the availability of workforce to conduct outreach, which was often strongly associated with assuring interest in and demand for services. Outreach was identified as a key factor in raising program feasibility in terms of addressing cultural barriers; establishing trust; and keeping appointment schedules full. However, stand-alone outreach is not reimbursable. Several programs developed specific strategies to increase the cost effectiveness of outreach, thus increasing the likelihood of full implementation.

These included:

- One program hires college students on a part-time basis to staff a call center; their responsibilities included calling families with Medicaid-eligible children to determine whether the family has access to a dental home.
- One program uses outreach staff to conduct follow-up with parents of children who participated in Head Start screening activities or sponsored outreach events such as health fairs and other community events.
- One program establishes outreach to schools and in communities based on the number of uninsured or Medicaid-eligible children and upon indication of interest, begins to educate stakeholders and parents about its potential services. School sites as well as sites at homeless shelters and low-income housing complexes are established once there are an adequate number of consents for treatment signed by parents, which increases the chance of reimbursable visits.
- One program interfaces with interpreters that work with immigrant assistance services through the department of social services. The interpreters conduct dental outreach as part of their work with immigrant families, obtain appointments for the children, and accompany the families to appointments.

POTENTIAL IMPACT

Site visitors assessed the potential impact of the programs to increase 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 contributed to the validation of the impact of their interventions.

Electronic data collection was often connected to billing. The data from these systems demonstrated achievement of process outcomes related to increasing access to care solely in terms of numbers and types of visits, and also had the potential to document an increase in the provision of preventive care, particularly if the care was reimbursable. Quantitative data confirming improved show rates and the provision of preventive care also speaks to the acceptability of the innovations to the target population. Although it is process data, in many cases the electronic records included information such as race/ethnicity; zip codes; primary language; and source of referral/recruitment site that could be used to demonstrate the impact of culturally relevant care, patient navigation and locating services in venues that are geographically accessible.

Activities for which there was less formal data collection other than process data documenting that the activities happened could still be connected to validating potential impact through connecting the activities to the achievement of quantifiable outcomes. Although data showing the effectiveness of training was not likely to be formally collected, several programs emphasized that increases in preventive care visits were the result of increased willingness of providers trained in new techniques that raised their comfort and skills in working with young children. The outcomes of outreach were also difficult to document, but like training, were connected to the increased provision of care. Three programs felt that they could use electronic data combined with outreach or patient navigation data to report the connection between patient navigation or health education interventions, and increased access to appointments or reduction in caries risk.

Although available data showed broad increases in access, there were some program components where potential impact was questioned. For example, in one program, the expanded role of dental hygienists as care coordinators included securing appointments with dentists for children needing follow-up or restorative care. The number of children that received these appointments was relatively low. Another factor that could affect potential impact was whether the complete program could truly increase preventive care in a population or community where the need for restorative care is extensive. In a program that provided training for two new positions—DHATs, whose scope of practice includes sealant placement; dental cleanings; x-rays and interim therapeutic restorations; and PDHAs, whose focus is on education and preventive care—the potential impact to increase access to preventive care focuses on the PDHA. However, both of these programs were assessed to have strong potential impact due to the overall increase in access; one is in a state where there are very few dentists that accept Medicaid, and the other is in a state where remote communities had no access to oral health care prior to the training of new dental workforce that live and work in the villages from which they come.

REACH TO TARGET POPULATION

All of the programs were developed to improve outcomes associated with increased access and oral health for primarily children, although several programs also served pregnant women to begin the cycle of preventive care early. The most common preventive services included oral health and hygiene education and instruction; nutritional counseling; fluoride varnish; sealants; case management and patient navigation; and referral for follow-up and restorative care. One program developed a protocol for silver nitrate application in place of restorative care in order to arrest decay in a non-invasive manner.

The reach of the programs to their specific target populations and communities was achieved through the following strategies:

- Increasing quality of patient interactions and experience. Techniques such as motivational interviewing; knee-to-knee exams; and increased one-on-one patient time for hygienists and dental assistants changed the perceived or actual experience of a dental visit for the patient, family members and the dental staff. In some programs, the staff interviewed expressed their increased sense of satisfaction at seeing the results of such techniques, especially when young children became easier to serve. Culturally responsive education materials and settings created a sense of welcome and safety for children and their families. One program described its program model as creating a "culture of caring" that not only was culturally relevant, but brought practices commonly used in private dental offices to dental clinics for low-income patients. This approach could increase the likelihood of patients to follow-through with preventive care visits by changing the reason for making dental appointments from acute need (pain or infection) to routine.

- Assuring cultural and linguistic competence. Three programs considered recruiting trainees or staff from target communities to be a major program component. Another program involved interpreters; although program staff expressed that it was sometimes difficult to know if complete oral hygiene information was correctly and thoroughly translated, the health educators conducting educational sessions developed visual aids, such as baby bottles filled with various amounts of sugar to represent the caries-producing potential of sugary drinks to transcend this potential barrier.

- Eliminating or reducing transportation and geographic barriers. To assure reach to target populations with geographic or transportation-related challenges, several programs located services in venues already frequented by the children and their families, including schools; homeless shelters; remote villages and Indian health services sites, eliminating or reducing the need for travel in order to access preventive or restorative care for programs using portable dental equipment. One program established a pediatric dental clinic within a pediatric hospital, and one program intentionally opened new clinics in geographic areas where there were a large number of Medicaid-eligible children but few or no dentists that accept Medicaid. Having workforce that could travel off-site, especially dental hygienists, dental assistants, and PDHAs, increased the likelihood of reaching target populations in accessible venues.

- Conducting outreach and follow-up. Creative outreach and follow-up strategies also improved reach. Engagement strategies, such as contacting families who may be in need of dental care, case management and patient navigation, were among the characteristics of programs assessed to be reaching their target populations. Some outreach strategies included obtaining lists of potential patients who would specifically benefit from the program, such as families with Medicaid-eligible children. Following screening and provision of preventive care, some programs trained hygienists as patient navigators or employed case managers to assure that follow-up appointments were made and kept. In some programs, specific outreach positions were grant-funded for this purpose and to provide case management to children needing extensive restorative care or hospital dentistry.

In spite of the adoption of strategies to improve reach, there have been challenges. Due to long histories of poor access to dental care and lack of preventive oral hygiene behaviors, many of the target populations have an extensive need for restorative care. Providing restorative care or assuring that the patient accesses restorative care requires resources that are often limited. A suggested rewrite: While many program staffs expressed a commitment to provide access to restorative care, the choice of providing restoration over prevention could impact resources that in turn could affect the program's potential and ability to reach more of its target audience. One program director whose program uses all of the above strategies to reach target audiences described this challenge as a choice between serving current patients and sites thoroughly by including restorative treatment plans while implementing preventive care, or stretching resources "too far" and placing program financial stability at risk in order to establish new sites, which may compromise providing the amount of restorative and preventive care provided at current sites.

Workforce innovations may partly address challenges in expanding reach by expanding the number of personnel available to provide preventive care in a cost-effective manner. This was especially true in states where the scope of practice for hygienists, DHATs, PDHAs, and dental therapists allowed a greater variety of preventive and restorative procedures, and where preventive care was reimbursed at higher rates. Saving the cost of having a dentist at off-site locations, and allowing dentists to focus on oral surgery and other advanced procedures, appears to allow continued reach to high-need target audiences, many of whom also have socioeconomic barriers to access. Having this workforce at off-site venues also addressed geographic and transportation barriers; training or employing members of this workforce from target communities addresses cultural barriers.

ACCEPTABILITY TO STAKEHOLDERS

Common stakeholders of the programs:

- Dental and other child health policy leaders. Statewide dental associations and dentistry boards; chapters of national organizations such as the American Academy of Pediatrics; elected officials; state government bureaus and regulatory agencies (including state Medicaid programs).
- Non-dental service networks and/or beneficiaries. Parents; WIC and Head Start programs; schools; community organizations; elected officials.

Non-dental service providers and beneficiaries constituted the majority of stakeholders interviewed during the EAs. Feedback from this group was overwhelmingly positive, particularly regarding the ability of the innovations to increase access. The stakeholders listed program characteristics such as the provision of child-friendly environments; cultural and linguistic competency; advocacy for advancing new models of workforce and systems of care; and the extensive number of non-traditional community sites as strengths of the programs. Several also mentioned feeling rewarded for adopting good oral health practices for their children by the positive response of program staff.

Dental policy leaders are also stakeholders of this group of programs, particularly when it comes to workforce innovations that stretch or expand the scope of practice for current workforce or add new types of providers to the workforce. Although part of the mission of these groups is to assure quality of and access to care, many programs adopting workforce innovations found themselves affected by policy-level actions. These actions were sometimes related to concern that new types of providers would replace dentists or debate regarding whether the administration of specific preventive care outside of the direct supervision of a dentist is in accordance with the licensed scope of practice for that provider type. There was also controversy or delay in creating reimbursement for preventive care for new workforce such as dental therapists. Program leaders were sometimes involved in legislative advocacy to influence expansion of the recognized workforce or enhanced scopes of practice so that preventive care could be increased. One program listed legislative advocacy as a main program component, having played a major role in the licensing of dental therapists in that state.

SUSTAINABILITY OF INNOVATION

As is the case with plausibility and feasibility, sustainability of the programs is strongly connected to continual financial and institutional support as well as cost-effectiveness. Programs that addressed socioeconomic barriers to access and appeared sustainable relied on reimbursements from Medicaid for preventive care. Additionally, reimbursement of preventive care provided off-site by workforce other than dentists, a key activity in addressing barriers to access, increased the sustainability of these interventions. Programs such as the one that established numerous clinics in locations accessible to large numbers of Medicaid-eligible children were considered sustainable due to consistently high utilization of available services, which resulted in a consistent reimbursement stream. The financial stability of five out of the nine programs reviewed is directly associated with Medicaid revenue; most others also receive reimbursement from Medicaid and private insurance, or train workforce to provide Medicaid-reimbursable services to be sustainable. The likelihood that educational interventions could be sustainable was also considered to be stronger if provision of education could be linked to a Medicaid-reimbursable service. For example, one program that relies on grant funding for health education sessions was considering combining the sessions with the provision of sealants to reduce reliance on grant funding.

There was some concern about relying on Medicaid, especially with the pending implementation of provisions in the Affordable Care Act that may increase Medicaid eligibility but possibly decrease reimbursement. Staff from two programs mentioned that having services embedded in the state budget and combining Title V-funded services with Medicaid services may create a greater safety net. These programs provided training and technical assistance to providers and emphasized the benefit of having interventions, including coordination of dental care and staff to perform this function, embedded into the state system in order to increase the likelihood of sustainability.

Provider—particularly dentist—and policymaker buy-in to support and adopt innovations that depart from traditional methods of delivering dental care are intertwined with assuring sustainability. Training in techniques such as motivational interviewing and the availability of dental care coordinators and patient navigators to increase the show-rate for patients with socioeconomic, cultural, and geographic barriers to access appear to increase the willingness of dentists to serve difficult-to-reach populations. Providers are also attracted to training as an opportunity for professional development, especially when continuing education credits are offered.

In one program, the ability to be reimbursed for services can have a positive effect on staff concerns that their program was perceived as a "charity clinic." For this program, the reimbursements enable them to earn a modest profit on the provision of fluoride varnishes. On the policy level, program staff mentioned that support from state dental associations and organizations such as the American Academy of Pediatrics contributed to sustainability by influencing legislative decisions affecting the expansion of the dental workforce, licensing and scopes of practice, and reimbursement policies.

Generating data showing measurable results was both a contributor to sustainability and a challenge, specifically to the sustainability of educational interventions. As previously mentioned, all but two programs collect process data about preventive and restorative services that can substantiate an increase in access.

However, without longitudinal data or comparison groups, using the data to demonstrate measurable results of specific educational interventions was challenging, as was identifying staff time and resources to work with data beyond the patient visit data that is routinely collected. One program mentioned that lack of documentation of how innovations were adopted and their results may make it difficult to secure future funding.

TRANSPORTABILITY OR GENERALIZABILITY

All nine programs developed or adopted innovations that could be generalized and tailored for other communities interested in addressing barriers to accessing preventive care. The generalizable elements of innovations addressing socioeconomic, cultural, and geographic barriers are described further below.

Addressing socioeconomic barriers

- Reimbursement. Although changing reimbursement structure requires political support, this strategy has been adopted in several states. One program is modeled after a training and technical assistance approach that includes an incentivized Medicaid system used in four other states.
- Location of services. One program strategically opened dental clinics in areas where there were few or no Medicaid providers and developed portable care sites that deliver reimbursable services at schools and other venues. In general, this set of programs provide a high volume of services using a replicable, innovative business model that increases financial stability, allowing the addition of strategies such as outreach tailored to specific communities to further increase access.
- Adapting program strategies for new venues frequented by individuals of low-socioeconomic status. One program, a dental clinic located within a hospital, adapted its approach to work in community health centers and Federally Qualified Health Centers (FQHCs), including program training and service delivery activities and the program business model.

Addressing cultural barriers

- Recruiting, training and employing staff from target populations and communities. Though not a new strategy, targeted recruitment and training is replicable and can be tailored not only to specific communities, but to specific workforce innovations. One program expanded the dental workforce in its state by recruiting DHAT and PDHA trainees from villages where they would then be placed to work. This model can be replicated to address the challenges in encouraging communities with historically poor access to care to adopt new oral hygiene behaviors and take advantage of new preventive care services that are offered by their own community members.

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■ Creating culturally and linguistically appropriate and welcoming spaces and educational interventions. Several programs emphasized the importance of creating comfortable and welcoming spaces in order to encourage specific populations to access care. Visual aids and materials in different languages, as well as the availability of translation services, were also mentioned as replicable.

Addressing geographic barriers

■ Bringing services to where the target population lives and attend. Above and beyond addressing socioeconomic barriers, locating services close to or at schools can increase access. Several program models were replicable with some adaptation based on scope of practice and licensing/supervision requirements for dental providers to work outside of dental clinics. This can affect generalizability in terms of being able to provide services as well as being able to cover the cost of services. Examples of this variability can be seen among the programs in the group that used dental hygienists to provide preventive care. In certain states, preventive services were reimbursable when provided by a dental hygienist under a supervising dentist; in other states, only preventive care provided by a dentist was reimbursable.

■ Drawing upon some form of reimbursable preventive care, the generalizable component of the program may be the approach to establishing services off-site. Outreach is a starting point. One program that has many off-site locations begins by conducting outreach in new communities and developing relationships with stakeholders. As pockets of need are identified, outreach staff work with community groups and schools to elicit signed consent from parents for children to receive services. At schools, the outreach staff may even attend PTA meetings and back-to-school events to educate parents about their services and increase the number of consents obtained. This increased the number of children accessing care as well as the number of reimbursable visits.

Other generalizable elements

Several programs implemented innovations that did not address specific barriers to access, but that may be generalizable, including:

■ A written protocol for application of silver nitrate to arrest decay, greatly decreasing the need for restorative care. The training program and educational component of the intervention could be replicated, and its use is appealing to many children and their parents because it is painless and effective if all visits are completed and oral hygiene habits to prevent future decay are adopted. Although the procedure is not reimbursable, it is extremely inexpensive. One challenge to replication is that in some states, only dentists are licensed to apply silver nitrate; however, the addition of the procedure to the scope of practice for dental hygienists is under review in the state where the program is currently implemented.

■ Community engagement activities that reinforce the importance of oral health, including health fairs and activities such as holiday festivities and summer camps. These activities help raise the visibility of, and increase familiarity with, dental providers, which assists in recruiting patients and relaying the message that accessing preventive oral health care is acceptable and desirable.

STAFF AND ORGANIZATION CAPACITY

Staff receptivity to and capacity for evaluation

Staff from all programs were highly receptive to the idea of participating in evaluation of their programs. All felt that their leadership, administration or umbrella organization would strongly support a rigorous evaluation of their work. However, capacity to participate in evaluation varied between programs. None of the programs currently had staff whose time could be allocated to lead an evaluation or perform data collection and related tasks on any significant level. Two programs did have staff whose time was at least partially allocated for evaluation; one staff worked half of her time on evaluation activities, but only worked part-time overall. The evaluation activities on which she worked included compiling results of patient satisfaction surveys (she was assisted in this by volunteer interns), and analyzing utilization and cost-effectiveness data. The other program had an epidemiologist who compiled data for annual reports to funders.

Organizational capacity for evaluation

Most organizations collected some type of data that could be used in evaluation. Numerous data sources were listed, especially Medicaid and other public insurance program claims reimbursement data, including the number of fluoride varnishes and dental/oral evaluations as well as provider type. Data from electronic health records included demographics; information on procedures performed; type of provider performing the procedure; and for several programs, patient risk data, and CRA scores. At least two programs also entered data into the Sealant Efficiency Assessment for Locals and States (SEALS) CDC system.

Other data sources appeared to be program-specific and were used by fewer programs; they included training records indicating the number of dental and medical providers trained in new techniques and innovations; school dental screening audits; chart review data; surveys of pregnant women that included questions about access to dental care; clinic and community profiles for areas from which trainees were recruited; state child and household surveys; stakeholder feedback; outreach activity data; patient focus group notes; patient satisfaction surveys and behavioral risk assessment; and anticipatory guidance data. One program gathered case studies of the post-training activities of those who graduated to assess whether the intent of the training program, which was to expand the dental workforce by adding community outreach workers to the dental team, was achieved.

Limitations in capacity to conduct evaluation

Besides staff time, several programs mentioned that some of their data systems were difficult to use. For example, one program had an electronic medical record (EMR) that did not allow staff to enter data without a great deal of labor and required an IT technician to modify the software. Other programs had sites without access to electronic data entry systems, so data had to be recorded on paper charts and then entered into electronic records at a later time. This was especially true of school and community-based sites. However, no program felt that staff could not use new technology to enter data provided that training and possible adjustments of electronic systems were provided.

Data not related to patient visits or without an established system for data entry, such as SEALS, was not likely to be routinely documented in a manner that would lend itself to analysis, including training data, outreach activity data, and stakeholder feedback. However, several programs used Microsoft ACCESS, Excel spreadsheets or similar programs to compile this data when time to do so was available.

SUSTAINABILITY OF HEALTH EFFECT

The greatest concern about sustainability of the health effects provided by programs was the continuation of reimbursement, especially through public insurance. Medicaid and other public insurance programs increased access to preventive care by providing enough financial stability to programs to allow for outreach and provision of educational interventions that were not directly reimbursable. Without reimbursement, most programs agreed that access to preventive oral health care would not continue to increase and would most likely decrease; this implies that the health effects that resulted from providing preventive care could be lost. For programs facing challenges with reimbursement, sustainable health effects had not yet been established. For example, although community dental health coordinators successfully completed training, their potential to conduct outreach and preventive care in many states was limited by lack of reimbursement for community health work related to dental care.

Programs also invested in maintaining the cost-effectiveness of preventive care in order to sustain and expand positive health effects. One program compared the cost of establishing stationary sites at or near schools and community programs to the cost of portable care, and concluded that the cost-effectiveness of portable care would allow for many more sites to be served than attempting to set-up new stationary clinics.

Almost all of the programs emphasized the importance of continuing and expanding training efforts as a means of maintaining sustainable health effects. One program that provided training to dentists and dental providers felt that the training provided to dentists on how to work with young children and technical assistance for Medicaid billing was the main factor in the substantial increase in preventive care and dental visits for Medicaid-eligible children across the state. Stakeholder feedback for this program echoed this, reflecting satisfaction with the child-friendly strategies and environments created by the dentists who participated in the training. In this example, training and engaging the target population through increasing the welcoming and child-appropriateness of preventive oral health care produced a sustainable health effect.

The adoption of other patient-centered strategies appropriate for patients with historically poor access is also intertwined with sustaining the health effects of preventive care, especially in decreasing attrition rates.

These strategies include:

- Culturally relevant education, care and venues;
- Locating sites at accessible locations;
- Assistance in arranging transportation and translation;
- Use of active call centers to raise appointment attendance; this is particularly important with interventions such as silver nitrate application, which requires multiple visits, and for application of fluoride varnish at recommended intervals;
- Results-focused interventions, such as motivational interviewing and goal setting, with follow-up to increase retention.

Discussion

EVALUATION POTENTIAL OF PROJECTS

Readiness for evaluation

All of the programs appear to be ready for some type of rigorous evaluation. One of the factors contributing to their readiness is the longevity of delivering the innovations, which varies from three to 20 years. For those that have been delivering an innovation for less than five years, the actual clinic or overall program has provided training or served the target population of children for long enough to provide baseline data that could be used to assess the impact of the innovation with current patients or how trainees are using what they learned in new communities. For example, programs that are newly providing fluoride varnish or applying silver nitrate were serving the same populations of children previous to their adoption of these strategies, and have data on rates of decay among children prior to implementation.

In fact, the availability of data and capacity to collect data are other strong signs of readiness for evaluation among all of the programs. Most programs that deliver direct care are using electronic health records. Although one program estimated that 20% of its sites were still using paper records, there is a wealth of electronic data available. Again, these data could be used as baseline data to examine a variety of evaluation questions about population-specific increases in access and markers of decrease in oral disease, such as reduction in caries, over time. In addition, all programs indicated that their staff saw the value of a rigorous evaluation and were available to participate in data collection activities, although as previously mentioned, there were inquiries as to the level and type of training that would be provided, either with new or current data collection systems.

The longevity of many of the programs also played a strong role in the systematic manner in which the innovations are delivered, which results in a clear model to evaluate. The programs developed or adopted new and innovative models that could advance the provision of preventive care beyond the barriers faced by their target populations and refined them over time to enhance effectiveness. For example, to reach immigrant and refugee populations, staff from most of the programs were able to outline specific, systematic strategies for how outreach, engagement, education, preventive services and follow-up are delivered. Among programs aiming to increase the number of Medicaid-eligible children accessing preventive care, a specific flow of services, beginning with activities such as outreach or screening in schools and resulting in the delivery of preventive care, could be described as a step-by-step process. Even the program in which staff members were trained to conduct knee-to-knee exams and other dental services for young children that had no written training curriculum had a distinct system that only needed to be documented; the system itself was well-established.

Workforce innovations presented a variety of opportunities for evaluation with varying readiness, based on whether the new workforce model was delivering services as intended. As reflected in the program logic models, new workforce was being used as a cost-effective strategy to increase access by providing education or services off-site in remote areas and represented an opportunity to work more deeply in communities with a history of poor access. Although some new workforce members may have been limited in the scope of services they were providing at the time of the evaluability assessments, the programs may still be ready for evaluation exploring the outcomes that occurred as a result of training the new workforce and integrating them into the dental provider team, and increasing the program's ability to serve populations with barriers to access.

Across all programs, staff believed that there would be significant support for rigorous evaluation from stakeholders, including Medicaid and other governmental offices. Several indicated that this might include providing accessibility to data specific to the program, as well as statewide, or providing composite data that could contribute to baseline or cohort-specific data collection. However, it was also acknowledged that some large data sets may not be as useful, or would need to be used in combination with other systems that provide more detail. For example, in one state, the Medicaid claims system does not capture child level data. This would also imply that if a variety of existing data sources are used, the potential for cross-referencing data may be limited if the systems are dissimilar.

HOW THESE PROJECTS REFLECT THE LITERATURE

The programs reviewed in this synthesis report reflect the literature that addresses barriers to accessing oral health care in their use of multiple innovations to increase preventive care, and to implement strategies that re-engage populations and communities with poor access. The programs are adopting new workforce models, providing services in non-traditional settings, increasing the amount of care available in areas where dental providers are scarce, and increasing the competency and investment of providers in welcoming children and their families with historically poor access to maximize use of preventive care. All of these innovations are mentioned in the literature as ways to address the complex intersection of barriers to access.

Rigorous evaluation of these programs has great potential to address gaps in the literature about improving access to oral health care. Of particular value are the interplay of the innovations used and the weight of each in addressing barriers to care. The amount of preventive care provided, the provider type, the venue where the care takes place and the cost-effectiveness and efficiency of providing care, combined with changes in preventive oral health behavior among various patient cohorts, could further address the intersection of socioeconomic, cultural and geographic barriers to care, and inform program development in regards to best practices.

One area mentioned in the literature as having potential for increasing access that is not reflected in this group of programs, though noted in another synthesis report, is the involvement of medical providers in preventive oral health care. One of the programs in this group was located within a pediatric hospital, and several have made training on providing and billing Medicaid available to pediatricians, but the uptake of this training was extremely low or not successful at all. To increase access among populations with historically poor access to oral health care, engaging medical providers may be a key factor since expanding routine pediatric visits to include oral health care would decrease the number of appointments that have to be kept and to which families have to travel.

POTENTIAL EVALUATION DESIGNS

Available data sources from almost all of the programs reviewed included electronic health records, Medicaid and other public insurance claims reimbursement data, and data from CRA and SEALS. These data lend themselves to both process and outcome evaluation and could be used to measure program effectiveness at increasing access to preventive care. In reviewing how the innovations adopted by these programs specifically impact the barriers they were designed to address, it may be most useful to consider both qualitative and quantitative methods in order to understand how and what parts of the innovations most impacted the outcomes. This approach would provide a picture of how the programs and their design affect barriers to access on a broad scale within the target population.

Examples of evaluation designs that would combine process and outcome evaluation include:

- Examine longitudinal trends in decay reduction through patient visit records and interview parents to explore how and why perception of oral health has changed, including the community engagement activities to which the parents and children were exposed.
- Assess increase in visits and preventive procedures among children with Medicaid or other public insurance, and interview program staff and parents to determine which innovations— outreach, patient navigation, case management, assistance with transportation, etc.—seem to be connected with the increase in visits. This evaluation could also be done by documenting "doses" of outreach and collecting data from new patients on how they were referred to services, or from current patients to determine whether patient navigation or case management affects appointment show-rates and retention in care.
- Interview immigrant families who received oral health instruction and anticipatory guidance from dental hygienists and health educators to determine which risk reduction behaviors they adopted; compare the extent of adoption of risk behaviors among families with children who had a decrease in new caries to those whose children did not.

Other potential evaluation designs could examine the process and effect of expanding the dental workforce. For example, several programs developed innovative models that allow dental hygienists and dental assistants to practice at the top of their license, or trained them to provide new services or work in non-traditional settings. Others used mid-level providers as a less-expensive means of expanding into geographic areas where access to care is difficult. The impact of these workforce innovations could be measured in terms of efficiency; productivity; cost effectiveness; quality of care and health outcomes, as well as increasing access.

Lastly, since reducing socioeconomic, cultural and geographic barriers to care was often achieved through the adoption of community activities that expand beyond traditional dental care, process evaluation assessing how community, stakeholder, and target population engagement occurs would be useful in determining best practices for addressing these barriers. Combined with utilization data (e.g., number of visits, preventive procedures performed) and data measuring longitudinal reduction in tooth decay, it may be possible to determine how community level oral health interventions enhance access to preventive care and result in lasting improvement in oral health.

Limitations

We have attempted to synthesize what we have learned about innovations that address barriers to oral health care based on site visitor reports from the EAs. The methodology has several limitations. First, given our birds'-eye view of these programs, our 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. In addition, we examined various types of programs targeting different audiences and implemented in different settings. Third, the small sample size made generalizations inappropriate. However, we gained a feel for the barriers and strategies for addressing the barriers to care. Lastly, the data we 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, they were not experts of the programs. The amount of information and type of information in the reports 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

This synthesis report explores innovations used by nine oral health care programs to address socioeconomic, cultural, and geographic barriers to oral health care access, focusing on low-income children. The biggest lesson learned from review of these programs is that to overcome barriers to access, innovative use of workforce must be combined with strategies that re-engage populations with a history of poor access as well as a strengthened system to train and encourage providers to adopt non-traditional roles or practices. Without a demand for preventive oral health care services, the establishment of programs that address barriers to accessing such care cannot be effectively implemented. Outreach, patient navigation and case management as well as community engagement activities such as events focused on oral health, delivered by staff who themselves come from the target populations, can foster use of services.

Although feasibility of implementation and sustainability for these programs was strongly connected to continued availability and expansion of Medicaid and other public insurance program reimbursement for both preventive and restorative oral health care, there are several strategies being currently used by these programs that increase access and contribute to cost-effectiveness. Training and employment of providers such as dental therapists, DHATs, PDHAs, CDHCs not only allows a larger menu of services to be performed at a lower cost, but raises buy-in from communities with a history of poor access to dental care due to the appeal of having "one of their own" providing services. In addition, combining oral health education with reimbursable services allows the teaching of parents and families to reduce the risk of decay among children reduces the reliance on grant funding, which can be inconsistent.

To translate the individual experiences of these programs into best practices, evaluation that examines the impact of new workforce models as well as how community engagement changes the perception and interest in oral health care among populations that face barriers to access would provide a guide for other communities and programs to use. Several programs included fostering the expectation of high quality oral health services, or increasing positive perception of oral health care among populations with barriers to access in their logic models. Examining the impact and outcomes of innovations that affect both the supply and demand sides of preventive oral health care would provide a holistic framework of best practices for dissemination to policy-makers and service providers that could be used to reduce and further efforts to eliminate barriers to care.

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Appendix A

Rationale: *Adopting workforce and programmatic innovations that address socioeconomic, cultural, and geographic barriers along with strategies that involve and engage communities with poor access to oral health care will increase the availability and use of preventive care services.*

Inputs	Activities	Outputs	Short-Term Outcomes (~1–3 years)	Long-Term Outcomes (~3-6 years)	Impact
▪ Medicaid reimbursement for covered services ▪ Populations with disparities in access to oral health care (Medicaid-eligible populations, immigrants, communities of color) ▪ Legislation creating new dental workforce ▪ Reimbursement for services provided by new workforce ▪ Culturally aware workforce recruited from target communities ▪ Collaborative community partners ▪ Collaborating dentists	▪ Dental provider training in Medicaid billing, working with young children ▪ New workforce training, including recruitment from target communities ▪ Create welcoming venues (child-friendly, reflective of communities served) ▪ Establish portable or stationary dental care sites in target communities (e.g. areas with large numbers of Medicaid-eligible children and few or no Medicaid providers) ▪ Outreach to raise interest in oral health (e.g. sponsorship of community events reaching populations with poor access) ▪ Provide preventive oral health services (screening, sealants, fluoride varnishes) ▪ Patient navigation and case management to assure appointment attendance and follow-up for restorative care ▪ Establish community partnerships to increase reach to and engagement of target populations	▪ # of dental providers trained ▪ # of new workforce trained ▪ # of preventive services provided by new workforce ▪ # of reimbursed preventive services provided by new workforce ▪ # of referrals from community partners ▪ # of patients receiving services from new dental workforce ▪ # of community education/outreach contacts ▪ # of patients served with barriers to access (Medicaid recipients, those in remote areas or from specific cultural communities) ▪ # of patients accessing follow-up or restorative care through patient navigation or case management	▪ Increased uptake of preventive services in communities with poor access ▪ Increased number of new workforce trained ▪ Increased number of welcoming and child-friendly dental care sites ▪ Increased Medicaid reimbursement for preventive services provided by dental workforce ▪ Increased dental services to young children and communities with poor access ▪ Increased # of portable dental care sites ▪ Increased community interest in oral health ▪ Increased provision of culturally appropriate oral health education ▪ Decreased # of children with tooth decay	▪ Improved quality of preventive oral health services ▪ Increased prioritization of oral health in communities with historically poor access to care ▪ Increased # of participants receiving preventive oral health services ▪ Expanded types of preventive oral health services provided ▪ Earlier detection and prevention of tooth decay	▪ Changed expectations, especially regarding access to preventive care, among populations with historically poor access to oral health care ▪ Communities empowered and engaged in using oral health care services ▪ Prevention, early detection and treatment of tooth decay ▪ Reduction of disparities in access to oral health care ▪ Improved oral health