

# Robert Wood Johnson Foundation Workforce Innovations in Oral Health



## Providing Preventive Oral Health Care to Infants and Young Children in Women, Infants, and Children (WIC), Early Head Start, and Primary Care Settings

# Providing Preventive Oral Health Care to Infants and Young Children in Women, Infants, and Children (WIC), Early Head Start, and Primary Care Settings

Prepared by Revels, M, Cruz, K, Cheung, K, Carver, L and Krol, D

## TABLE OF CONTENTS

Introduction .....	3
Literature Review .....	5
Methods .....	8
Context of Programs .....	11
Logic Models .....	15
Results .....	19
Discussion .....	30
Limitations .....	33
Conclusion .....	34
References .....	35
Appendix A Preventive Oral Health Services for Young Children	

## 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.

# Robert Wood Johnson Foundation Workforce Innovations in Oral Health

## SYNTHESIS REPORT

September 2013

## Providing Preventive Oral Health Care to Infants and Young Children in Women, Infants, and Children (WIC), Early Head Start, and Primary Care Settings

### 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 seven oral health programs that provide preventive oral health care to young children (infants, toddlers, and children up to 5 years old) in Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Early Head Start (EHS), and primary care settings. All of the programs strive to increase access to preventive oral health care by integrating dental services into primary care settings, WIC clinics, or EHS centers. These programs also rely on primary care providers (physicians, nurses, medical assistants, etc.) or new types of dental hygienists who can practice in community settings to deliver preventive oral health services. Two additional reports in this series describe the remaining programs that provide care in non-dental settings and programs designed to specifically address socioeconomic, cultural, and geographic barriers to preventive oral health care.

The findings from the EAs of these programs are synthesized to highlight diverse and innovative strategies that are utilized to provide preventive oral health care in primary care settings, WIC clinics, or EHS centers. 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

### CONTEXT OF THE PROBLEM

Dental caries is one of the most common diseases affecting young children in the United States (USDHSS, 2000). Over the past decade, public health officials have seen an increase in dental caries among children ages two through five years of age (Dye BA, Tan S, Smith V, et al 2007). This is especially true for low-income children and those living in poverty, among children aged 3–5 years living at or below 100% of the federal poverty level, untreated dental caries was significantly higher compared with children living above the poverty level. Health disparities exist as well among racial and ethnic groups in the United States, among children aged 3–5 years, the prevalence of untreated caries was significantly higher for non-Hispanic black children (19%) compared with non-Hispanic white children (11%) (Dye, Li and Thornton-Evans, 2012).

Although dental and medical professional organizations, such as the American Dental Association, American Academy of Pediatric Dentistry, and the American Academy of Pediatrics, currently recommend dental visits by age one, many dental providers lack awareness of these recommendations or may not have received training to effectively provide care and treatments to young children, additionally caregivers lack awareness of these recommendations and may be unable to access pediatric dental services in their communities (Mertz and Mouradian, 2009). Dental workforce shortages have also contributed to access issues; as the dentist-to-population ratio continues to decrease and become more centralized, rural areas and underserved communities lack diverse and culturally competent dentists who can meet their needs (Mertz and Mouradian, 2009).

Lack of access to dental care continues to be a public health problem, especially among young low-income children; racial and ethnic minorities; recent immigrants; medically compromised; and those living in remote geographic locations (USDHSS, 2000; Rozier et al 2003). Multi-pronged approaches that address workforce shortages and increase opportunities for primary prevention have been widely endorsed and implemented across the country to meet the immediate needs of preventing dental disease (Rozier et al 2003).

### DENTAL PROFESSIONALS WORKING IN COMMUNITY SETTINGS

Alternative oral health care delivery systems have been adopted by many states. For example, one of the more popular approaches is expanding the roles of dental hygienists and enabling them to provide services in a variety of community settings, such as Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Early Head Start (EHS), and schools (Institute of Medicine (IOM) and National Research Council (NRC) 2011; Battrell, Gadbury-Amyot, and Overman, 2008). Federal programs like WIC and EHS that serve pregnant women, infants, or toddlers are viewed as suitable locations to reach underserved populations and provide preventive oral health services for multiple reasons (IOM and NRC 2011). Programs like WIC, which serves over 7.4 million individuals and one third of all infants born in the United States, has significant reach (Lee et al., 2004). Participants in WIC and EHS may also be enrolled in Medicaid; approximately 55 percent of children in WIC and 65 percent of Head Start are also enrolled in Medicaid or CHIP, which may further aid their ability to access preventive oral health care (Jones, et al., 2000). Additionally, WIC's nutrition risk criteria, which helps WIC staff determine eligibility, also includes questions on

the oral health of participants and EHS' program performance standards include provision of oral health screenings (Jones et al., 2000). WIC and EHS provide services to families with young children, the underserved and vulnerable populations that are likely to have high caries rates and lack access to preventive oral health services (IOM and NRC 2011; Mouradian, Huebner, and DePaola, 2004; Jones et al., 2000). WIC and EHS are also well known, trusted, and regularly visited locations where families with young children go for health and nutritional services, education, and assistance accessing other community services (Jones et al., 2000; Lee et al., 2004). Timeliness is also a factor when considering when and where to offer preventive oral health services. WIC clinics and EHS centers encounter pregnant women and very young children at opportune times when families are open to behavior change and can receive services before the onset of disease. These settings are also convenient for low-income families as services can be integrated into regular clinic or center activities, and not require travel to another location for services (Lee et al., 2004; Mofidi et al., 2009). WIC and EHS staff also deliver health related anticipatory guidance for young children and pregnant women. Many of the nutritional messages delivered by WIC staff complement preventive oral health messages, and these complementary health messages are often provided using similar patient-centered education techniques, such as motivational interviewing, to elicit behavior change (USDA WIC Works Resource System, 2006; Mouradian, Huebner, and DePaola, 2004).

In recent years many oral health programs that serve young children have also focused on serving pregnant women, as pregnant women who have a regular source of dental care are more likely to have their children visit the dentist and their children are healthier than children of mothers who do not have a regular source of dental care; similar interventions aimed at reaching black or Hispanic children found even higher dental care use for mothers who had a regular source for dental care (Milgrom et al., 2010 and Grembowski, Spiekerman, and Milgrom, 2008). Moreover, for some low-income women who are eligible for Medicaid, pregnancy and post-partum period may be the only time period when they have access to medical and dental care, and opportunities for dental referral may aid them in accessing care and needed treatment during their brief coverage (Le et al., 2009). Integrating oral health services in WIC clinics can help pregnant women overcome some of the common barriers to accessing oral health care by increasing their awareness of its importance, increasing awareness of dental insurance coverage, and referring WIC clients to dentists who are comfortable treating pregnant women and young children (Le et al., 2009).

Barriers commonly found among programs that integrate preventive oral health services in community settings include inadequate reimbursement to support the provision of dental services in non-dental settings, high no-show rates, and cultural barriers (Jones et al., 2000). Dental hygienists working in community settings also experienced barriers to their work. These include ability to adapt to a new work setting that required dividing their time between direct patient care and non-clinical services; managing patient behavior effectively during oral health exams; managing their time assisting patients with referrals, and case-managing patients and identifying referral dentists who are willing to treat pregnant women and young children who may be on Medicaid or uninsured. In general, dental hygienists displayed four main characteristics that helped them overcome some of these challenges, namely entrepreneurship; independent decision-making; dedication to providing services to underserved populations; and a desire for continuing their education (Battrell, Gadbury-Amyot, and Overman, 2008, Milgrom et al., 2010).

## NON-DENTAL PROVIDERS PROVIDING PREVENTIVE ORAL HEALTH SERVICES IN PRIMARY CARE SETTINGS

Increasingly, primary care settings have been viewed as another appropriate place to provide oral health education and preventive services during well-visits (Mertz and Mouradian, 2009). The American Academy of Pediatrics, the Society of Teachers of Family Medicine, and the Accreditation Council for Graduate Medical Education have guidelines, and in some cases requirements, that pediatricians, family medical doctors, and medical residents perform dental screenings (IOM and NRC 2011). Integrating oral health services in primary care settings has been shown to increase access to preventive oral health care that young children may otherwise lack (Rozier et al., 2003). Nearly 95 percent of infants and young children have a medical provider, but may not have visited a dentist (Mouradian, Huebner, DePaola, 2004). Low-income children also have better access to primary medical care than dental care (Rozier et al., 2003). Medical health messages and services provided to young children are complementary to oral health messages as both focus primarily on prevention and anticipatory guidance (Rozier et al., 2003). Currently in many states pediatricians, family physicians, nurses, and nurse practitioners are providing preventive oral health services during well-child visits, and over half of all states in the United States currently reimburse physicians for applying fluoride varnishes through Medicaid (Mertz and Mouradian, 2009).

Oral health services provided by primary care providers may include risk assessments; oral screenings; fluoride varnish application; anticipatory guidance; and health education (Rozier et al., 2010). Successful program models like *Into the Mouths of Babes* that integrate oral health prevention services in the primary care setting have documented increased access to preventive oral health services for children with Medicaid (Rozier et al., 2010). Barriers commonly found in this integrated model include adequate training for primary care providers on the importance of oral health; technical training on how to perform preventive oral health services like fluoride application; and technical assistance on how to integrate services effectively into primary care practices, given physician's limited patient time and staff resistance (Rozier et al., 2003; Close et al., 2010). Primary care providers may also resist integrating oral health services into their practices if there are not adequate dental referral sources in their communities (Rozier et al., 2003; Close et al., 2010).

## 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.

<b>Criterion</b>	<b>Description</b>
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 seven specific workforce programs that provide preventive care to young children, including infants and WIC participants. Two other reports in this series describe the remaining programs, dental providers in non-dental settings, 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.

## LOGIC MODELS

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, 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 seven programs that provide preventive oral health care to young children (infants, toddlers, and children up to 5 years old) in WIC, EHS and primary care settings. All programs aimed to reach young children age 5 and under. Only one program allowed services to children up to age 7. Two programs also provided services to pregnant, breastfeeding, or post-partum women and/or siblings in these settings. Insurance providers created three of the programs that were examined. A managed health care company and a nonprofit health care system created two different oral health integrated primary care programs. Additionally, a dental care organization created a WIC outreach program in rural health departments throughout their state. The remaining programs were developed and implemented by a state health department, private pediatric clinic, county access coalition, and a county health department.

### DESCRIPTION OF PROGRAM SETTINGS

In seven of the states where four programs were implemented in primary care settings, Medicaid coverage allows primary care providers (physicians, nurses, or medical assistants) to provide and receive reimbursements for performing preventive oral health services (AAP, 2012). In four states where four programs were implemented in WIC or EHS settings, state legislation expanded dental hygienists' scope and abilities to practice under general supervision of a dentist or as an independent practitioner in the community (ADHA, 2012).

### INTEGRATING ORAL HEALTH INTO PRIMARY CARE

The four programs that integrated oral health into primary care settings varied in size and setting, but provided similar preventive oral health services, including: provision of fluoride varnishes to all children aged 3 and under; oral health risk assessments; oral health education; and referrals to dental providers.

The four integrated primary care program models included:

- A pediatric clinic that integrated preventive oral health care into their entire pediatric well-visits.
- A consumer-governed, nonprofit health care system that integrated oral health preventive services into well-child visits across 25 health care clinics within its network.
- A managed health care company that delivered medical and dental care in three different states with reimbursement for primary care physicians who deliver preventive oral health services in primary care settings.
- A state health department-led initiative that offered oral health care in various settings, including, but not limited to, primary care settings, where physicians implement the program in their practices.

Among this group of programs, there are some noted exceptions regarding the use of program protocols, services offered, how services were integrated among staff, and referral systems. For example, two of four programs, the single pediatric clinic and the consumer-governed nonprofit health care system, have written protocols or policies in place outlining program implementation, and one program provided fluoride varnishes twice a year for children up to age 7. Additionally, one program noted that oral health responsibilities were split among staff; in this case, primary care providers conducted the oral health assessment and education, while other flow staff (medical assistants and licensed practical nurses) were engaged to apply the fluoride varnish.

One program mailed dental referral information and health education materials to patients after their visit. The two other programs provided these services during the visit. Regarding referrals, only two programs were able to track and verify whether referrals were successfully made through either their own data system or through agreements with other dental insurers.

Provider training was developed and administered by all four programs; however, only one training program was based on a formal training model provided by the American Academy of Pediatrics Education Practices in Communities (EPIC) program. This same program also provided fluoride varnish training via an online module mandated and developed by the state. The managed health care company's program also offered training to its dental staff so that they were better prepared to examine and treat young children who were referred to their offices by primary care providers.

### INTEGRATING ORAL HEALTH WITHIN WIC AND EHS

There are four programs that integrate preventive oral health services in WIC clinics and an Early Head Start center. These four programs also varied in size, setting, and use of new types of dental professionals. They included the following models:

- The previously mentioned state health department-led, statewide initiative that provided preventive oral health via dental hygienists in WIC clinics and EHS centers, public health nurses during home visits and in some WIC clinics.
- A county health access coalition that employed Registered Dental Hygienist in Alternative Practice (RDHAP) at WIC clinics throughout its county.
- A dental maintenance organization that utilized Expanded Practice Permit (EPP) Dental Hygienists in WIC clinics in the state's eight rural counties.
- A county health department with a mobile dental unit provided services at five of its seven WIC clinics.

## ORAL HEALTH SERVICES OFFERED IN WIC AND EHS

All programs provide the following services: risk assessments, oral health education, screenings, anticipatory guidance, and fluoride varnish application. One program provides caregivers of high-risk children two more doses of fluoride varnish for them to apply at given intervals in the months following their appointment. Another program also applies glass ionomer sealants (GIS) on children's primary teeth.

Other services included:

- One program educated clients about their dental benefits and provided a list of in-network dental providers in their community.
- One program offered an oral health card similar to a vaccination card, which documented each treated person's health status, data, and type of services provided.
- Two programs indicated close relationships with dental providers that would either guarantee next-day appointments for those in urgent need of dental care or alert dental providers to the status of their patient's need for services. One of these programs also documented the preventive services each patient received in their electronic health records. The two other programs indicated that they provided referrals, but details on the strength of the referral system and ability of staff to fully provide case management services could not be adequately assessed at the time of the site visit.

The frequency with which services were provided also varied among the programs; three of the four programs offered services once a month to WIC clients and one program offered services weekly at a busier clinic.

## TRAINING FOR STAFF INTEGRATING SERVICES IN WIC AND EHS

All program implementers (e.g. RDHAP or EPP dental hygienists, community health workers, public health nurses, or physicians) are trained by program coordinators on their program services (e.g. oral health education, risk assessments, anticipatory guidance, fluoride varnish application, etc.). All training takes place in person, with only one program offering an online training component for WIC staff on the importance of oral health. Public health nurses working in one program's WIC clinics were also trained to apply fluoride varnish, conduct oral screenings, and provide anticipatory guidance, and referrals to local dental offices

Additionally, one program trained its dental hygienists on Medicaid enrollment procedure, client eligibility for dental benefits, their program's data management system, and the WIC program. The WIC training covered basic information on WIC nutritional messages and motivational interviewing techniques to ensure that the dental staff align their approach and messages with WIC's. WIC staff are also trained by the oral health program coordinator on the oral health program in order to provide referrals for oral health services.

## STAFFING TO DELIVER ORAL HEALTH SERVICES IN WIC

All programs employed dental hygienists to provide the majority of their oral health services. Two sites employed newer types of dental hygienists who are allowed to operate without the direct supervision of a dentist. For example, one site employed a Registered Dental Hygienist in Alternative Practice (RDHAP) and another employed Expanded Practice Permit (EPP) Dental Hygienists. One program employed a dentist and dental assistant in its mobile van that visited WIC clinics; the organization that runs the mobile dental van requires a dentist to be present on the van in order for dental services to be provided.

All of the WIC programs engaged WIC staff in some aspect of the oral health program. WIC staff mainly referred clients and caregivers to oral health services offered in the clinic. They also provided limited oral health education and oral health screenings to WIC clients during their certification appointments. There was only one program that fully integrated these services in WIC by having WIC's public health nurses take over all responsibilities for providing preventive oral health services during WIC visits.

One multisite program set out to target the same population, young low-income children, in multiple settings: WIC, Early Head Start, a home visit program, and primary care clinics. Services were successfully integrated into their existing staffing structure in the home visit program, physician offices, and a few WIC clinics. This successful integration of care was aided by state policies that allow primary care providers (physicians, nurses, and medical assistants) to receive reimbursement for providing oral health services.

## 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 primary care, WIC, and Early Head Start 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.

### RATIONALE OR PROGRAM PURPOSE

All programs indicated that their purpose was to increase access to preventive oral health services and decrease the burden of disease by integrating services in non-dental settings such as WIC, Early Head Start, or primary care settings. Some programs also stated increased cost effectiveness as rationale for providing dental care in non-dental settings.

### INPUTS

The majority of programs noted similar inputs or resources that were necessary to implement their programs. These included:

- Statewide policies that allowed dental hygienists or non-dental providers to be reimbursed by Medicaid/CHIP for providing preventive oral health services.
- An umbrella organization that supported program implementation by providing training, technical assistance, and resources such as educational materials.
- A reliable dental provider in the local community who accepted Medicaid/CHIP and could treat young children.
- An oral health champion on staff who could spearhead implementation and obtain buy-in from staff to integrate new services into their current responsibilities.

Implementing organizations also had established systems to collect data on patients served; bill for reimbursement from Medicaid/CHIP; and schedule, track and refer clients for additional oral health services in the community. Lastly, programs used supplies and equipment for the delivery of anticipatory guidance documents and preventive services such as CRA, fluoride varnish, and education.

## ACTIVITIES

Among both program models, the following activities were noted to occur at the organizational level of the programs:

### **Coordinating organization**

- Build collaborative relationships between implementing partners (e.g. between the coordinating organization and program implementers at WIC clinics, Early Head Start centers, primary care clinics, etc.).
- Provide training and technical assistance to WIC staff or health care providers.
- Create and distribute program materials and oral health supplies (e.g. fluoride varnish, CRA, anticipatory guidance, etc.).

### **Implementing partners at WIC clinics, EHS centers, or primary care clinics**

- Determine clinic flow, staff responsibilities, and storage of supplies.
- Provide preventive oral health services (e.g. risk assessment, oral health education, anticipatory guidance, and fluoride varnish application).
- Provide case management and client referrals to community dental providers.
- Collect patient data in electronic health record, patient chart, or oral health program records.
- Submit reimbursement claims to Medicaid/CHIP or other insurer.

### **WIC clinics offered additional activities not found in the primary care programs**

- Train dental hygienists on WIC or Early Head Start program, population served, etc.
- Recruit WIC participants for oral health services.
- Schedule group or individualized oral health education events at WIC clinics.

Only three programs indicated that they routinely collected and assessed patients' oral health data for monitoring or evaluation purposes. One of these programs also had staff whose time was dedicated to this task, and had access to both medical and dental records to assess referral rates between their medical and dental clinics.



## OUTPUTS

Noted outputs for both program models included:

- Collaborating partners - number and type of clinics participating, frequency services offered.
- Training - number of trainings delivered and number of people trained.
- Recruitment – number and proportion of participants recruited, number and proportion of participants receiving services.
- Supplies – number and type of materials and supplies distributed.
- Services – number and type of services provided.
- Case management and referrals – number of referrals provided.
- Reimbursement – number of reimbursements submitted and received.

Two programs indicated that they collected data on patient retention and the incidence or prevalence of dental caries among their clients. One program also reported collecting data on the number of referrals completed.

## SHORT-TERM OUTCOMES

All programs listed the expected short-term outcomes as a result of their work:

- Increased number of participants receiving preventive oral health services.
- Increased number of children with regular access to preventive oral health services.
- Increased awareness of the importance of preventive oral health care among clients.
- Increased awareness of the importance of preventive oral health among providers (WIC staff, physicians, nurses, medical assistants, etc.).
- Increased ability among non-dental providers to provide preventive oral health education and/or services.
- Increased number of patients with an established dental home.

## LONG-TERM OUTCOMES

All programs stated anticipated long-term outcomes as a result of their work:

- Improved access to preventive oral health services for low-income families.
- Decreased incidence of dental caries among primary patient and possibly siblings.
- Increased dental visits by age one.
- Reduced disparities in oral health of children from birth to age five years old.
- Decreased incidence of hospitalizations due to oral health disease (e.g. ER visits and operating room care).

Two programs implemented in a primary care setting noted long-term reductions in the cost of care as a long-term outcome.

## IMPACT

All programs expected to increase access to and availability of preventive oral health care and improve oral health among young children. Most programs included reductions in oral health care costs or more effective use of Medicaid resources in impacts rather than long-term outcomes. Two programs noted reduced disparities in access to effective preventive oral health care and treatment. WIC programs also hoped to improve oral health among pregnant women. Notably, the logic model components that led to these long-term impacts did not assert the provision of care in primary care, WIC, and Early Head Start settings as a stand-alone strategy. All the program logic models also included referral to dentists when the level of care exceeded 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 were based on the logic that preventive oral health services provided to young children in non-dental settings by dental hygienists or primary care providers improves children's access to preventive oral health care and positively impacts their oral health outcomes. Findings from other studies support these programs' logic; for example, the North Carolina "*Into the Mouth of Babes*" project offered evidence that primary care providers can be trained to effectively deliver oral health preventive services to young children in a primary care setting (Rozier et al., 2003).

Five of the seven programs were determined to be plausible. 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. Of the five programs, two were implemented in WIC and three were implemented in primary care settings.

Overall the five programs are based on four assumptions:

- Fluoride varnish application is a strong preventive tool.
- Caregiver education on nutrition and oral health care can establish proper oral health behaviors for families and prevent future dental disease.
- Early oral health screenings will aid in the discovery of acute problems that can be ameliorated by a referral to a dentist.
- Providing preventive oral health services to populations at high risk for oral health disease in familiar and convenient locations at a time in their lives when they may be more receptive to them increases access to those services.

The 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 young children, such as fluoride varnishes. Although this procedure could be part of any dental care plan, making them available in primary care, WIC, and Early Head Start 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.

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, some 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.

Two programs were noted to be less plausible due to the limited dosage of the intervention. In these two cases, preventive oral health services were only offered on a monthly basis for a few hours at each clinic. The ability of these programs to impact WIC clients' oral health is limited since dental hygienists are not always available to provide services and ensure that clients receive the recommended two fluoride applications annually. In order to increase the likelihood of achieving the desired outcomes in WIC settings, it appears that it is important to ensure: availability of providers, frequency of visits, and adequate follow up to make sure clients return for services. It appears that primary care settings are more equipped, than some of the WIC programs, to track services provided and integrate the recommended two annual fluoride varnish applications into each well-child visit.

In addition to factors increasing plausibility, several common threats to plausibility existed across the programs.

- Several programs lacked a formal curriculum to guide oral health education provided by WIC staff or primary care providers.
- Referral systems for follow-up dental services for several programs were weak, consisting of solely providing clients with a list of potential dental providers.
- In programs that are spread across large geographic areas or have multiple sites, program coordinators did not have systems in place to make sure that program components were implemented consistently across sites.
- In primary care settings, providers noted time constraints as a barrier to fully implementing all program components.
- High no-show rates among WIC clients combined with high turnover of patients covered by Medicaid/CHIP may further complicate ability to consistently provide services to clients in a timely and consistent manner.

Additionally, in one WIC program, clients who were noted to be at high nutrition risk were often not referred for oral health classes as WIC staff funneled these clients into one-on-one nutritional counseling classes to address their nutritional risks due to medical conditions, dietary habits, etc. While the goal is to determine the best course of action with a registered dietitian, high-risk clients may not be given the same opportunity as other clients to access preventative oral health services.

## FEASIBILITY

All but one program was found to be feasible. Key factors in maintaining program feasibility included workforce and training; technical assistance and program champions; systems integration; and resources.

### Workforce and Training

Full implementation of programs in this model relied heavily on having providers who were committed, enthusiastic, and able to effectively provide services to the target population. Many program coordinators noted that staff who regularly interacted with clients had to be comfortable and skilled at talking to clients and soliciting information about their oral health practices; offering guidance and instruction on appropriate oral health practices in a non-threatening or judgmental manner; examining and interacting with young children; and working with people from different cultural, linguistic, or economic backgrounds. One coordinator pointed out that many people could be trained on these topics, but some staff excelled naturally where others did not. Site visitors speculated that dental hygienists who had good interpersonal skills, were empathetic, or were from the same communities as their clients excelled at building rapport and having natural interactions with their clients.

Staff that were trained to provide health messages and were competent in their new skills are key contributors to program feasibility, and can effectively counsel caregivers on the importance of early oral health care and misconceptions about the use of certain preventive services like fluoride varnish. Some programs noted that having providers who were, despite training, uncomfortable administering certain components of the programs (e.g. fluoride varnish, risk assessment, etc.) hindered the programs' abilities to fully implement a given practice.

Additionally, researchers noted that some dental hygienists found new professional development opportunities when they had the option to work in community settings, such as WIC or Early Head Start. Working in community settings provided dental hygienists with opportunities to expand their current scope of work, develop new skills, and provide services to new clientele. Some program coordinators noted greater job satisfaction and retention among dental hygienists who participated in the community outreach programs. This development was largely a positive unintended consequence of the new community service aspect of their work. This kind of staff satisfaction also enhances the feasibility and likelihood of full program implementation.

### **Technical Assistance and Champions**

In addition to the dental hygienists and primary care providers, each program also had a coordinator who delivered needed technical assistance to staff implementing the program at different sites. This was usually a champion who spearheaded the integration of oral health services in their particular clinic, or someone who filled both of these roles in a given site or across a number of sites. Program coordinators who provide technical assistance are integral to program implementation, especially in programs with multiple sites where implementation may vary across sites due to each site's specific staffing mix, location, resources, and populations served. Program coordinators worked to gain staff buy-in, offered guidance on the necessary protocols and systems that would ensure successful implementation, and trained staff on oral health techniques for examining young children, including how to apply fluoride varnish, etc. Champions may also provide TA, but they mainly encourage staff to see beyond common barriers such as the burden of additional tasks to understand how new services benefit patients, and can be effectively integrated into staff's current clinic flow, health messages, and responsibilities.

## Systems Integration

Programs that successfully implemented oral health services into their clinics either established new systems or integrated these new services into their existing clinic systems to enhance the feasibility of full implementation.

Some examples for system integration include:

- Effectively integrate oral health messages with other anticipatory health messages. Providers discussed how nutritional or behavioral practices also have oral health implications (e.g. guidance on selecting appropriate snack foods for toddlers that highlight nutritional and oral health implications).
- Modify clinic flow to accommodate new services and supplies. Several programs reorganized their clinic flow to determine the best place and time to integrate and provide oral health services to their patients and store supplies in accessible locations.
- Utilize staff to perform tasks appropriate to their licensure. Programs used staff such as medical assistants or nurses to conduct risk assessments, oral health education, and provide fluoride varnish, and physicians to reinforce anticipatory guidance and oral health educational messages. This enabled the programs to more efficiently use their staff time and maximize reimbursement rates.
- Incorporate oral health procedures and codes into pre-existing data collection systems to ensure documentation and the provision of services at next appointment. Electronic health records or patient charts can be modified to include oral health procedures, codes and recommendations for services at a patient's next appointment.
- Create reminder, referral, and case management systems. Patients may need specific reminders to make oral health care appointments, especially when this service is provided separately from their regular appointment. Case management and referral systems are also integral to helping patients access additional and needed oral health care in their communities.

Common threats to feasibility related to system integration included problems with billing systems; state policies that limited fluoride reimbursements based on age; and lack of program monitoring across multiple sites. While all programs relied heavily on Medicaid reimbursements, only one primary care program sought reimbursement from other dental insurance companies to cover their privately insured patients. At the time of the EA visit, much of this program's services were deemed to be out-of-network, which caused billing difficulties and misunderstandings among patients and program staff. This problem has currently been resolved and the preventive oral health services delivered by this primary care program are now considered in-network, which will reduce patient confusion over billing.

Both program models benefited from state policies that allowed for primary care providers and dental hygienists to reimburse for fluoride varnish application. However, one WIC program was limited by state Medicaid reimbursement policy that restricts fluoride varnish reimbursement to children under 3 years, thus not allowing reimbursement for 4- and 5-year-olds on WIC. Additionally, this state will only reimburse dentists and not dental hygienists or non-dental providers for oral health screenings and anticipatory guidance, which further restricts this program's funding stream and use of staff in WIC or EHS settings. Lastly, only one primary care program and two of the WIC programs that were implemented across multiple sites had established monitoring systems in place to ensure fidelity to their program model. The primary care program monitors services provided and reimbursement information. Both WIC programs use dental practice management software to access patient health insurance information; patient records; document services; and manage referrals to dentists.

## Resources

Programs' feasibility also depended on having certain resources available for training staff, integrating services, and guiding patient education.

Essential program resources included:

- Training curriculum
- Clinic protocol or policy
- Risk assessment forms for providers
- Educational pamphlets or visual aids that are available in multiple languages or appropriate for low-literacy populations

Programs used these types of materials to guide implementation and ensure consistency across sites and among staff. All seven programs had a set training curriculum outlining the importance of oral health and how to perform some of the preventive oral health services, such as oral health screenings. Two out of the seven programs had a clinic protocol or policy that outlined how and what services should be delivered by staff. Risk assessment forms and educational pamphlets were also used by all programs to ensure that staff provided consistent health messaging to clients, and clients received visual aids or pamphlets that reinforced health messages that they heard from their providers.

WIC programs also encountered staffing resource issues when they employed dental hygienists to provide services in very rural or low WIC population service areas where there is not a sufficient population for service delivery to be a cost-effective use of dental hygienists. In one program the coordinator had to determine the most cost-efficient use of the dental hygienists' time, and decided either to not offer any services or only offer them on a limited basis.

## 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.

Programs appear to have strong potential impact, given that a young child may visit a pediatrician or WIC clinic (on average) eight times before the age of 3 years, and given that most children under the age of 3 years do not have a dental home (Rozier et al., 2003). Five of the seven programs had formal or anecdotal evidence that they increased availability of and access to preventive oral health services. Three programs, two in primary care settings and one program set in WIC, were notable for having strong potential impact due to their ability to effectively integrate oral health services into regular primary care or WIC appointments, and establish strong referral systems with dental providers who treat young children and accept Medicaid. The remaining two programs were noted as having limited impact since the programs were either implemented with limited hours of operation or staff availability, or were not consistently implemented across multiple practice sites. For example, one program implemented in multiple sites demonstrated variation in how services are delivered, who delivers the services, how frequently services are offered, and how long the program has been implemented at a given site.

Follow-up care was one area often lacking data to address impact. While all but one of the programs reported that referrals are made for follow-up care as necessary, only two programs had systems to collect data on referral appointment attendance. The one program's lack of effective case management and referral systems also limited its ability to substantially impact children's oral health outcomes.



## REACH TO TARGET POPULATION

All of the programs were developed to improve access and oral health by providing care in primary care, WIC, and Early Head Start settings. Through establishing sites for preventive oral health care directly in settings already frequented by underserved young children, individuals can receive preventive services such as oral health and hygiene education and instruction; nutritional counseling; fluoride varnishes; and referrals for follow-up and restorative care. Establishing available care in these settings provides some level of “automatic” reach. However, in most cases programs lacked sufficient data to assess reach to their target population. Many programs used their limited resources to track and monitor how many people or services were provided rather than collecting data to measure the size of their total target population.

Similarly, some sites had difficulty in assessing what proportion of their patients/clients received preventive oral health services because they use one data system for tracking the number of clients and services provided within their WIC or primary care practice and a separate system to track the number and type of dental services provided. Often data was analyzed in isolation from each other. For example, in many of the WIC programs, data were only available that documented how many patients were seen by dental staff; data was not triangulated with overall patient load served by WIC. At one WIC clinic, program coordinators estimated that only 3 percent to 4 percent of their total WIC clients received oral health services. In another WIC program, staff estimated that 17 percent of clients who received oral health services received a second or third encounter appointment, during which oral health education and fluoride varnish applications were provided.

Many factors appear to contribute to some of the WIC programs’ abilities to reach their clients, including high no-show rates for WIC dental appointments (estimated to be about 50 percent), a requirement by a few WIC programs that dental appointments be booked months in advance, and the provision of oral health services on a limited basis—either once a month or once a week. In order to overcome these programmatic barriers, many WIC sites have instituted reminder calls to clients, double-booked appointments to ensure dental staff have clients to serve, or offered dental services only to those clients who are present when dental services are also being offered at the clinic.

Data collection efforts documenting reach within primary care settings also varied. Programs that had access to patients’ medical and dental claims could track referral rates, and reported that 28 percent of children seen and treated for oral health followed up with a dentist within 90 days of their medical appointment. The extent of reach to the overall clinic population varied among the programs. In one program with multiple sites, reach varied among clinics of different sizes. At one of the large clinics, staff estimated that preventive oral health services were offered about five times a day by each provider whereas other participating clinics were able to provide fluoride varnish during 67 percent of all well-child visits. In a single clinic model program, services were estimated to be provided to 35 percent of all of their pediatric clients.

## ACCEPTABILITY TO STAKEHOLDERS

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.

- **WIC staff.** Acceptance among WIC staff was very strong, as many staff recognized a real need for oral health services among their clients. WIC staff accepted dental hygienists providing oral health services at WIC; buy-in was based on the oral health services not creating additional work for WIC staff, and that the oral health education complemented WIC's nutrition-related messages. In WIC clinics where public health nurses implemented the program, acceptability was low in the beginning due to nurses initial lack of comfort with providing oral health services to clients; however, after nurses received training, many were able to more easily incorporate it into their regular duties. In clinics where WIC leadership was supportive, WIC staff also became supportive after receiving training and technical assistance on how to integrate it into their workflow and submit reimbursement for services.
- **WIC clients.** Many WIC clients were initially unaware of the importance of early oral health recommendations for very young children, but after WIC staff and dental hygienists provided information about the services, clients appeared to be accepting and enthusiastic about receiving these services in a WIC setting. This observation is based primarily on anecdotal evidence from staff who noted that some clients show up repeatedly for services; inquire about services; or ask to receive preventive services themselves or for other children in their family.
- **Primary care providers.** Although most primary care providers affiliated with the programs in primary care settings agreed that oral health services were an important preventive service for their patients, they initially resisted the additional responsibilities and questioned the long-term feasibility of the program. Provider acceptance increased when responsibilities were split among physicians, nurses, and medical assistants in each clinic. This division of responsibilities was accomplished by integrating various oral health services into each staff's regular clinic duties.
- **Primary care setting clients.** In general, patients found the delivery of oral health services in primary care settings to be acceptable. Clients in one group of primary care clinics expressed some disapproval due to the dental billing system and fees that arose as a result of oral health services being billed as out-of-network. Changes to this primary care clinic's billing system are scheduled for 2014 and will allow for full coverage of services provided and in-network billing.
- **Dental community.** In one community there were a small number of dental providers who were not accepting of oral health services being offered in non-traditional dental settings. Some of these dentists reported that preventive services for very young children were unnecessary or should only be delivered in traditional dental settings. Two other programs also encountered difficulty identifying providers who would provide care and treatment for children under age three.

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.

## INTERVENTION SUSTAINABILITY

All of the programs appear to be sustainable, and none demonstrated any sign that their implementation might be halted in the near future. All programs sustained their efforts by having well-trained staff; technical assistance from oral health experts; and strong organizational support for the implementation and maintenance of services. In most programs in primary care settings, program coordinators, who often acted as program champions, integrated oral health services into their pre-existing billing, data collection and clinic flow systems to allow for the most efficient use of resources. Staff, stakeholders, and sites fully committed to the goals of the programs -willing to work long hours and to go above and beyond to complete activities to enhance the program- also contributed to program sustainability. In four programs where providers can be reimbursed for delivering these services, revenue was used to offset staff time, therefore contributing to the model's long-term sustainability.

For three programs, it was unclear how financially stable they were, as full financial disclosures were not provided. One program, a statewide initiative, relied primarily on federal grants to help cover the shortfall caused by insufficient Medicaid reimbursement for dental hygienists' provision of services in WIC or Head Start programs. While a policy in that state allows non-dentist providers to be reimbursed for fluoride varnish applications, the reimbursement does not allow non-dentist providers to be reimbursed for delivering other services, including oral health screenings and anticipatory guidance. In this state, only dentists are currently eligible to be reimbursed for all three of these services.

## TRANSPORTABILITY OR GENERALIZABILITY

All seven programs feature straightforward designs that could be transportable to other settings or target audiences. Only one program relied on a dental van, a special resource that may not be available to deliver services in other settings or to other populations. Overall the program models require the following factors to be in place in order to successfully implement them in other settings:

- State policy that allows dental hygienists to work independently of a dentist or in a community setting.
- Medicaid policies that allow reimbursements for non-dental staff to provide preventive oral health services.
- A stable dental referral source in the community that accepts Medicaid and can treat young children.
- An organization that can provide training, technical assistance, and educational materials on preventive oral health services to WIC, Early Head Start, or primary care providers.
- A willingness among other programs to integrate oral health into their services or curriculum.
- An oral health champion at each site who can spearhead implementation and obtain buy-in from staff to integrate new services into their current responsibilities.

Across the seven 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 seven 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 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 and organizational leaders in all of the programs were receptive to having their programs evaluated to identify areas for improvement, to understand their current effectiveness, or leverage additional funding for future expansion. Many of the programs were already conducting activities that would support program evaluation. For example, four of the seven programs participated in research projects. Capacity among staff and organizations to support these additional evaluation activities varied. In most cases technical expertise in research design, data collection methods, and data analysis came from external sources such as universities or research grants.

Another factor impacting the program capacity to participate in a rigorous evaluation is the availability of easy-to-use integrated data systems that track the delivery of oral health services, including health education, and patient oral health outcomes. All sites regularly collect data in patient charts, EHRs, or other data collection systems as a part of-the job duties. However, additional efforts that may be required to create such an integrated data system or to synthesize data from the multiple existing sources may not be feasible at current staffing levels. For at least two of the five programs ready for evaluation, additional external technical assistance, and possibly funding, will be needed to support any additional evaluation activities.

### **SUSTAINABILITY OF HEALTH EFFECT**

Five of the seven programs are 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, risk assessments, and oral health education. Another factor increasing the likely sustainability of the health effect provided by the oral health services was the frequency and regularity of visits. Programs in which patients more frequently received the recommended preventive services and had a strong referral system to get patients into needed or follow-up dental care were more likely to have sustained health effects. The greatest concern about sustainability of health effects among the programs was associated with concerns about providing a sufficient dosage of services to young children on a consistent basis.

## Discussion

### EVALUATION POTENTIAL OF PROJECTS

#### Readiness for evaluation

Five of the seven programs appear to be ready for a rigorous evaluation. One of the factors enhancing their readiness is the longevity with which the programs have been implemented, for three years or more. 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 their health-related outcomes.

Capacity to collect data was another indicator of the programs' readiness for a rigorous evaluation. These five 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 patients' risk for caries; the number and types of services provided; as well as whether referrals were provided to participants.

Two of the five programs had either conducted a feasibility pilot or a needs assessment before they were fully implemented that may have helped them more effectively establish their baseline measures and data collection systems.

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.

### 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 to young children in WIC, Early Head Start, and primary care settings. These programs increase young children's 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 settings familiar to young children and their families. Specifically, evaluation data on the effectiveness of various methods to design, implement, monitor, and sustain these programs in primary care settings would be valuable for dental and non-dental providers interested in offering services in these non-dental settings.

## POTENTIAL EVALUATION DESIGNS

Available data sources from all of the programs reviewed included: patient chart level data, including clinical notes, and Medicaid claims data. Only a few programs noted that risk assessment data was tracked by dental hygienists in patient charts. Continuous collection of risk assessment data may be useful in measuring patient progress in key areas such as behavioral changes or oral health outcomes.

Some of the programs stored data in a paper or chart format, while other programs entered data into a computer program. Many of the WIC programs had not integrated oral health services in their WIC data collection systems; instead these services were documented and tracked separately.

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?
- Five 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 oral health care
  5. Decrease in oral and other health disparities
- To what extent does participating in the program increase attendance of the target population with a regular dental home?
- What proportion of the eligible population is being reached with this program's services?
- What proportion of patients reached by the program receives preventive oral health services that meet current oral health guidelines (e.g. two fluoride varnish applications each year)?
- How successful are referrals to dental providers to treat young children and/or pregnant women?
- What referral systems or personnel (e.g. dental hygienists vs. non-dental providers) are most effective at securing needed follow-up care?
- What administrative and workflow activities support the effectiveness of the model?
- What types of training curricula, materials, or formats are effective in preparing non-dental service providers to provide preventive oral health services?
- What are the long-term oral health outcomes for children treated for urgent issues identified through screening?
- What if any cost savings result from delivering oral health services during well-child visits in primary care settings or at WIC and Early Head Start centers?

In addition, a number of rigorous evaluation designs can be considered for the five programs. Possible designs include:

- A pre-post design with comparison groups. This design requires following a cohort of patients or clients through the oral health program and a cohort of a similar group from another WIC clinic, Early Head Start center, or primary care setting that is not receiving services to determine the impact of the receipt of oral health services on oral health outcomes. This type of evaluation can also be used to assess program changes in participants' knowledge, attitudes, and behaviors (KAB) related to oral health care.
- A time-series study design with comparison groups. This design would expand on the pre-post design and may provide more valuable information to help determine how program activities impact the observed outcomes by looking at changes over multiple time periods (e.g., monthly). A time-series design could provide additional evidence about the strength or ability of a program to produce outcomes, if a program was able to reliably show that it continued to improve health outcomes over time among new groups of program participants.
- A sibling study design. This is an alternative design often used in low-income or Medicaid populations given some of the challenges following this population over time (e.g. maintaining contact with study participants, participants cycling in and out of government programs due to changes in their family situation or income, etc.). In this design, siblings serve as the comparison group. For example, siblings currently receiving preventive oral health services in primary care, WIC, or Early Head Start settings are compared to their siblings who did not receive preventive oral health care services. Trends in health outcomes and health care utilization and costs can then be compared between the two groups. This study design controls for external factors, such as home environment, socioeconomic situation, and the community. Another advantage is that with appropriate analytical techniques, it can result in the outcomes that would otherwise require a longer study to determine.
- Pilot vs. current implementation. Programs that conducted a pilot before they implemented their program could use their pilot data to serve as a comparison group. The pilot data could be used with a retrospective cohort study design or could include sites involved in current implementation with a prospective cohort study design. A retrospective cohort study design would entail looking back at two groups of people for which you have dental records, one group that has already participated in the program and another group that has not, and comparing the health outcomes between these two groups based on available data such as dental records. This type of evaluation could examine caregiver knowledge and/or behavior change, cost savings, the programs' impact on children oral health outcomes, etc.
- Cost-benefit analysis. 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.
- Provider assessment. A provider assessment can be conducted among program staff, partners, and stakeholders that collect their feedback on program implementation strategies, strengths, and weaknesses of the program.



## 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 seven EAs of programs providing oral health services in primary care, WIC and Early Head Start settings. The methodology has some limitations. First, given the bird's-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 health professionals who have expanded roles in community settings and the engagement of workforce providers from primary care, public health, and childhood development can play an essential role in increasing access and availability to preventive oral health care. The seven programs included in this report have increased the number of young children and pregnant women who have received preventive care over the years by offering program services in settings familiar to them.

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 young children, such as two fluoride varnish applications per year, 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. Training dental and non-dental providers, especially with evidenced-based curricula, on how to best offer services and manage patients in primary care, WIC and Early Head Start settings also enhanced program plausibility.

Five of the seven programs appeared ready for an outcomes-focused evaluation. Two programs were noted as not being ready for evaluation as they were still in the early stages of implementation. A number of potential evaluation questions and possible study designs can be conceptualized for these programs. Rigorous evaluations of these programs can yield findings that can help expand and strengthen the integration of oral health care in WIC, Early Head Start, and primary care settings by identifying best practices for program implementation, increasing access, containing costs, and improving short- and long-term oral health outcomes.

## References

1. American Dental Hygienists Association. 2012. *Direct Access States*. American Dental Hygienist Association. March 27, 2013 [http://www.adha.org/resources-docs/7513\\_Direct\\_Access\\_to\\_Care\\_from\\_DH.pdf](http://www.adha.org/resources-docs/7513_Direct_Access_to_Care_from_DH.pdf)
2. American Academy of Pediatrics. 2012. *State Medicaid Payment for Caries Prevention Services by Non-Dental Professionals*. March 27, 2013. <http://www2.aap.org/oralhealth/docs/OHReimbursementChart.pdf>
3. Battrell, A, M, Gadbury-Amyot, C C and P. R Overman. 2008. *A qualitative study of limited access permit dental hygienists in Oregon*. Journal of Dental Education, 72(3), 329-343..
4. Bisgaier, J, Cutts, D B, Edelstein, B L, and K.V. Rhodes.2011. *Disparities in child access to emergency care for acute oral injury*. Pediatrics, 127(6), e1428-e1435.
5. Bisgaier, J and Rhodes, K V. 2011. *Auditing access to specialty care for children with public insurance*. New England Journal of Medicine, 364(24), 2324-2333.
6. Close, K, Rozier, R G, Zeldin, L P, and A.R. Gilbert. 2010. *Barriers to the adoption and implementation of preventive dental services in primary medical care*. Pediatrics, 125(3), 509-517.
7. Dye B A, Tan S, Smith V, et al. *Trends in oral health status: United States, 1988–1994 and 1999–2004*. Vital Health Stat. 2007 Apr; 11(248):1-92.
8. Dye B A, Li, X, and G Thornton-Evans. *Oral health disparities as determined by selected Healthy People 2020 oral health objectives for the United States, 2009–2010*. NCHS data brief, no 104. Hyattsville, MD: National Center for Health Statistics. 2012.
9. Grembowski, D, Spiekerman, C, and P. Milgrom. 2008. *Linking mother and child access to dental care*. Pediatrics, 122(4), e805-e814.
10. IOM (Institute of Medicine) and NRC (National Research Council). 2011. *Improving access to oral health care for vulnerable and underserved populations*. Washington, DC: The National Academies Press.
11. Jones, C M, Tinanoff, N, Edelstein, B L, Schneider, D A, DeBerry-Sumner, B, Kanda, M B, and P. Mitchell. 2000. *Creating Partnerships for Improving Oral Health of Low-income Children*. Journal of Public Health Dentistry, 60(3), 193-196.
12. Le, M, Riedy, C, Weinstein, P, and P. Milgrom. 2009. *An Intergenerational Approach to Oral Health Promotion: Pregnancy and Utilization of Dental Services*. Journal of Dentistry for Children (Chicago, Ill.), 76(1), 46.
13. Lee, J Y, Rozier, R G, Norton, E C, Kotch, J B, and W.F. Vann. 2004. *Effects of WIC participation on children's use of oral health services*. Journal Information, 94(5).
14. Mertz, E and Mouradian, W. 2009. *Addressing children's oral health in the new millennium: trends in the dental workforce*. Academic Pediatrics, 9(6), 433.
15. Milgrom, P, Sutherland, M, Shirtcliff, R M, Ludwig, S, and D. Smolen. 2010. *Children's tooth decay in a public health program to encourage low-income pregnant women to utilize dental care*. BMC Public Health, 10(1), 76.
16. Mofidi, M, Zeldin, L P, and R.G. Rozier. 2009. *Oral health of early head start children: A qualitative study of staff, parents, and pregnant women*. American Journal of Public Health, 99(2), 245.
17. Mouradian, W E, Huebner, C, and D. DePaola. 2004. *Addressing health disparities through dental-medical collaborations, part III: Leadership for the public good*. Journal of Dental Education, 68(5), 505-512.
18. Rozier, R G, Stearns, S C, Pahel, B T, Quinonez, R B, and J. Park. 2010. *How a North Carolina program boosted preventive oral health services for low-income children*. Health Affairs, 29(12), 2278-2285.
19. Rozier, R G, Sutton, B K, Bawden, J W, Haupt, K, Slade, G D, and R.S. King. 2003. *Prevention of early childhood caries in North Carolina medical practices: implications for research and practice*. Journal of Dental Education, 67(8), 876-885.
20. U.S. Department of Health and Human Services. *Oral Health In America: A Report of the Surgeon General*. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000.
21. U. S. Department of Agriculture's WIC WorksResourceSystem.2006.WIC Program Nutrition Education Guidance. [http://www.nal.usda.gov/wicworks/Learning\\_Center/ntredguidance.pdf](http://www.nal.usda.gov/wicworks/Learning_Center/ntredguidance.pdf)

## Appendix A Preventive Oral Health Services for Young Children

**Rationale:** *Providing preventive oral health services to young children in settings that are convenient to them (e.g., Early Head Start programs, WIC clinics, primary care clinics) increases the access and availability of these services.*

