INTEGRATION OF ORAL HEALTH INTO PEDIATRIC MEDICAL PRIMARY CARE IN COMMUNITY HEALTH CENTERS





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EXECUTIVE SUMMARY

BACKGROUND

Early childhood caries (ECC) is a highly prevalent disease, particularly in low socioeconomic children, that is consequential and preventable. Almost a quarter of children 2-6 years of age in the U.S. are affected by ECC and for 10% of 2-5 year olds, the disease is untreated.¹ Left untreated, ECC can lead to severe tooth destruction and abscesses, necessitating costly therapeutic interventions, often under general anesthesia. While evidence-based health preventive measures are effective, often, they are not accessible or are underutilized. Ideally, dental screenings and referral should be a part of the standard of care in the pediatric medical setting. Regular use of fluoridated toothpaste also has been recognized as an effective measure to prevent caries in preschool children. Additionally, fluoride varnish application is effective but does not reach the majority of children for whom it is indicated. At present, fewer than half of Medicaid-enrolled children receive a preventive dental visit each year,² and purchase of dental insurance from the exchanges established by the Affordable Care Act is optional.

Yet, almost all vulnerable preschool children have regular well-child care visits. Integration of oral health screening, health promotion, and fluoride applications into the medical well-child visit is recommended by both pediatric medical and dental professional organizations. In 2014, a study by the Pediatric Oral Health Research and Policy Center of the American Academy of Pediatric Dentistry and sponsored by the DentaQuest Foundation identified the following factors for successful integration of oral health into pediatric practices: champions in the primary care practice, delegation and integration of oral health activities, inclusion of oral health charting in the electronic medical record, and the existence of a collaborative team.³ This comprehensive report formed the basis for our current investigation into specific barriers and facilitators for integration of oral health hito primary care medical practice in federally-qualified health center (FQHC) settings, where socio-economic factors, cultural diversity, language barriers, resource constraints and low parental health literacy may create challenges that are different from conditions found in private medical practices or in academic centers. Moreover, FQHCs are governed by federal statutes requiring FQHCs to provide "primary health services" (Section 330), which includes "preventative dental services," unter definition of primary health services.⁴ These preventative dental services range from the most basic services, such as oral hygiene instruction and fluoride varnish, to "supplemental health services," which can be offered in-house or through contractual relationships with community providers.⁴

In this report, we present the results of an investigation and analysis of conditions and contexts, attitudes, beliefs, resources and policies associated with oral health integration in FQHCs. For this study, we selected six clinics in two East Coast states, representing a range from FQHCs with few oral health services available and barriers to integration compared to FQHCs where pediatric and dental services are physically co-located or well-integrated into the medical practices.

METHODS

We selected three FQHCs in State 1 and three in State 2 to represent a continuum of oral health integration into pediatric services. Over a six-month period, we examined and analyzed contextual, organizational and professional factors that may facilitate or hinder integration. We used a multi-method approach to ensure that data collection represented a variety of perspectives and content areas:

- 1. Background information (Appendix 2) provided by Chief Finance Officers (CFOs) or their designates about population demographics, clinic financial and organizational structure, and resources;
- Telephone interviews (Appendix 3) with key informants and clinic employees, who fit the description of "decision makers, clinicians, and support personnel," e.g., FQHC directors, finance officers, the medical director, physicians and nurse practitioners, nurse managers, medical assistants, and dentists, with gathered data analyzed using NVivo-10 software and inductive coding methods; and
- 3. Systematic observations at each clinic (Appendix 4), using a standardized checklist to gather information about the external neighborhood, general clinic ambiance, the physical plant, and the location and operation of the pediatric clinic and the dental unit, if applicable, at each site.

An implementation science framework guided analysis of factors that predispose to adoption and implementation or represent challenges to the capacity of an institution to make progress toward inclusion of oral health education and preventive procedures into pediatric medical practice. We examined barriers and facilitators to integration in four implementation domains using the *Consolidated Framework for Implementation Research* model⁵, which analyzes attributes associated with implementation of integration, characteristics of the patient population, the inner context (the organization and its employees) and the outer context (resources, cosmopolitanism, peer pressure, and external policy and incentives).

RESULTS

Clinic characteristics as derived from background information and on-site observations

At the highest level of integration of oral health into pediatric practice:

Clinic A (State 1) is located in an economically-disadvantaged urban center but has co-located dental and pediatric services, a high level of integration of oral health into pediatric care, with oral health templates within the EMR system used by pediatrics, but no opportunity for EMR crosstalk between systems. Clinic X (State 2) serves a rural area that is economically depressed but has co-located dental and pediatric services, a high level of integration of oral health into pediatric dental and pediatric services.

At the intermediate level:

Clinic B (State 1) serves mainly Spanish-speaking patients in a small rural area; it has co-located dental and pediatric services that are not integrated, and providers who were certified to apply fluoride varnish have left the center. Clinic Y (State 2) serves an urban area that is economically-depressed, though gentrifying, and does not have a co-located dental clinic, but has moderate integration of oral health into well-child care, with no integration of medical and dental records. The health clinic is in the planning process of co-locating a dental clinic and is currently integrating behavioral health into pediatrics.

At the minimal level:

Clinic C (State 1) is a rural FQHC in an area with almost exclusively Caucasian patients. They have a small patient pool, and only 10% are children. There is no co-located dental practice. They do have an agreement with a local dentist; adults that have significant chronic medical conditions, and who do not have a dentist, are referred to

this provider. They do not refer any children to dentists. Clinic Z (State 2) serves an urban area that is economically-depressed but has co-located dental and pediatric services, minimal integration of oral health into well-child care in the pediatrics department, and minimal integration of medical and dental records. The clinic has, however, successfully integrated oral health in Family Medicine and has a successful model in place for integrating oral health, should that become a priority.

Comparison of clinics by level of integration:

Within each category of level of integration, clinics differed in size, length of time in operation, and ability to retain pediatric staff. Moreover, the size of the catchment area differed, as did patient composition (race/ethnicity, language and culture and number of patients in each age group). Clinics at both ends of the spectrum for integration reported similar numbers of patient with Medicaid insurance, and one of the clinics with the highest rate of private insurance (and presumably capacity to comply with dental referrals) was least likely to provide pediatric patients with dental referrals. In one clinic with minimal integration, only adults received dental referrals. There were clinical collaborations with dental schools at both ends of the spectrum. There was a high percentage of unreimbursed care at both ends of the spectrum; clinic operating budgets differed considerably within category of integration. Table 1 describes the attributes of each clinic by level of integration and allows for a visual comparison that correlates well with the narrative data described above, which was collected through direct observations at each of the sites.

Interview Data: Learning from interviews with FQHC personnel

Implementation characteristics:

Although neither clinicians nor administrators were familiar with the scientific basis behind oral health prevention goals, clinicians across all levels of organization appear to be well-informed about the importance of oral health within their pediatric education and can describe many opportunities for themselves or someone on the pediatric team to provide education and preventive care, such as fluoride varnish application. In all clinical settings, however, there is some sense of reluctance, given competing external demands for preventive tasks, and the lack of a sense that preventing poor oral health is as much their job as is preventing other childhood diseases. There was agreement that the problem of poor oral health is serious and persistent but a lack of consensus that clinicians could have a significant impact if oral health became a fully-incorporated and standardized pediatric goal.

Patient characteristics:

Clinicians identified significant parental knowledge deficits and misconceptions: a lack of parental familiarity with feeding practices and oral hygiene habits that promote strong, healthy teeth and gums; an emphasis on crisis care; and a belief that oral health care is not necessary for babies, toddlers and young school children. Parental neglect was noted, but negative, judgmental comments about parents' care of their children were rare. Many providers demonstrated considerable knowledge about the social and economic determinants of parental knowledge deficits and children's poor oral health status and were sympathetic to the challenges FQHC patients face in providing for their children's multiple needs. Moreover, interviewees report that FQHCs are held in high esteem by patients. The relationships that providers and administration forge with patient families were seen as

an excellent basis for integration of oral health into well-child care. Interviewees report that patient characteristics suggest an enormous need for oral health information and preventive practices that is not being met elsewhere in children's lives, either in the schools or in the community. Need does not always mean receptiveness to behavior change, but the clinicians and administrators interviewed in this project were optimistic that an oral health prevention program would be well-received by parents.

Inner Context

<u>Structure</u>: The idea of differentiated staff working together was reported as a familiar concept by interviewees working in settings established as a medical home or seeking that designation. There were no notable differences reported along the continuum of integration for most quantitative measures, except staff turnover, which may be a barrier to successful implementation.

<u>Organizational culture:</u> *Values:* Employees stated that they value their center as a medical home, a "one stop shop" for overall health for individuals and for the community. Lack of oral health resources created an uncomfortable situation and was in conflict with their belief that the center should serve the overall health of the patient. *Decision-making*: Some respondents spoke of a hierarchical model of decision-making, with the need for buy-in from upper-level administration and medical clinicians sometimes sidelining lower-level administrators. Many respondents noted a norm of medical providers being highly valued and their buy-in taking priority when discussing implementation of new activities. *Respect for specialty boundaries*: Respondents reported specialty boundaries within the clinic, with defined roles and areas of expertise. Overstepping these boundaries was reported as being uncomfortable or possibly having detrimental effects on the patients, resulting in either confusion or failing to meet patients' health needs.

<u>Implementation climate</u>: Respondents reported that lack of training contributed to resistance to oral health integration and suggested a need for training to be ongoing and clinic-wide to overcome discomfort in performing oral health activities. There was desire for change, with multiple staff reporting the state of dental health among children as an intolerable problem. However, concerns were raised across the continuum about the compatibility of integration of oral health into pediatrics. Respondents at clinics with no integration or moderate integration were concerned about system capacity and in an already-busy environment, overwhelming providers with additional responsibilities, and changing clinical protocols.

<u>Networks and Communication</u>: The addition of a patient-centered medical home seems to have bolstered the idea of working together as a team. Respondents across the continuum placed value on team identity and on open and consistent communication to improve patients' health. The lack of integration among electronic medical records was a challenge, particularly at sites that were co-located but had two different medical record systems. Integration of records was seen as desirable, but not likely to be feasible. Staff at one clinic with advanced integration doubted whether oral health was even charted regularly in existing systems. Boundaries of specialty and expertise were reported as a source of friction, with interviewees from both pediatrics and dentistry expressing some reluctance to cross beyond professionally-recognized areas of expertise.

<u>Readiness for Implementation</u>: Respondents across the continuum were unaware of informational resources describing how to integrate oral health into pediatrics. They were also largely unaware of oral health guidelines from the American Academy of Pediatrics, or if they were aware that guidelines existed, could not name any of

guideline content with certainty. Some sites reported oral health champions, who were actively involved and whose efforts were widely-known, particularly in clinics with more integration. Many cited the importance of a team leader, and the importance of administrators with a long-term view. Resources were reported as mixed, with funding opportunities largely unknown and available, future, or prior funding in danger of not being sustained. Respondents across the continuum reported concern over using limited, valuable time in the exam room and the need for space to be optimized when implementing integration.

Outer context

While interviewees of all six FQHCs are aware and acknowledge the oral health needs, barriers, and facilitators of their patients (see Patient Characteristics) and have tailored their services respectively, comments from respondents describe discrepancies between identified needs and the actual oral health services offered during a well visit. All sites reported networking with outside entities across a spectrum of relationship types: for training, for patient care, and for community oral health education and prevention activities. The more integrated health clinics were more likely to report working with external entities. Respondents reported that while strategies and incentives for oral health integration do exist (i.e., sources of funding, oral health guidelines and recommendations, and reimbursement incentive for fluoride application) and some of the more integrated health centers say they have been able to utilize them for their advantage, others say that these strategies do not appear to have enough impact or incentive to fully promote integration in centers with minimal integration.

DISCUSSION

Our findings confirm and elaborate on previously recognized facilitators of integration: the importance of oral health champions for integration primary medical practice, designation of an oral health team leader role, inclusion of oral health charting in the electronic medical record, and the existence of a collaborative team. We also identified significant barriers ingrained in systems of care delivery: division into professional silos, lack of training, lack of exposure to and familiarity with existing professional guidelines, lack of inter-professional collaborations, and low levels of EMR capacity. Surprisingly, co-location of pediatric medical and dental services did not determine the level of integration of oral health prevention into pediatric well-child visits. Geographic location, size of clinic, and financial stability did not appear to be major determinants of integration. While resources clearly play a part in decisions about clinical care priorities, the catalyst for change was the presence of imaginative leaders at the top and bottom of the hierarchy, who had long-term vision and leadership.

RECOMMENDATIONS FOR INTEGRATION OF ORAL HEALTH PREVENTION INTO PEDIATRIC WELL-CHILD VISITS AS A STANDARD OF CARE

Recommendation 1: Identify champions and foster leadership from the top of institutional hierarchies down to grass roots quality improvement committees.

Action Item 1.1: Widely disseminate evidence that supports inclusion of oral health promotion strategies in pediatric practice and relevant policy statements from professional organizations to FQHC CEOs, Chief Medical Officers, clinicians, and support staff.

Action Item 1.2: Review internal decision-making culture and structures to assess potential to be inclusive and conducive to change.

Action Item 1.3: Appoint two team leaders or oral health champions (one from pediatrics and one from dentistry) who are in regular communication with upper-level management about progress and next steps for integration.

Action Item 1.4: Form an oral health committee, comprised of many stakeholders involved in planning, implementation, and quality improvement.

Recommendation 2: Create an internal mechanism to reward FQHC staff champions, innovators and oral health providers, and establish external incentives for FQHCs that choose to implement integration of oral health into pediatrics within their healthcare systems.

Action Item 2.1: Introduce internal incentives to develop and sustain integrated care within FQHCs. Action Item 2.2: Create policy incentives for integration within local, state and federal healthcare systems.

Recommendation 3: Foster leadership at the national level by creating and disseminating a centralized 'go-to' virtual source for oral health information resources.

Action Item 3.1: Create virtual resources for clinics interested in integration. Action Item 3.2: Create a centralized location for oral health information sharing through professional organizations.

Recommendation 4: Implement standardized, ongoing quality improvement measures.

Action Item 4.1: Evaluate documentation and ease of extraction of data about oral health procedures and prevention counseling, and address barriers for data collection.

Action Item 4.2: Establish a standing oral health quality improvement committee that is designed to include both leadership levels and daily practice levels of the organization.

Action Item 4.3: Provide regular feedback to providers on oral health activities.

Recommendation 5: Provide greater opportunities for training pediatric staff in preventive oral health.

Action Item 5.1: Provide onsite workshops and links to useful oral health materials for all pediatric staff.

Recommendation 6: Increase funding for Oral health in FQHCs and increase awareness of funding opportunities.

Action Item 6.1: Increase funding opportunities and workshops for how to use funding effectively. Action Item 6.2: Secure funding to hire additional staff or expand present staff with a particular focus on connecting pediatric and dental efforts.

1. INTRODUCTION: WHY PROMOTE ORAL HEALTH AT A WELL-CHILD VISIT?

Early Childhood Caries—common, consequential

Early childhood caries (ECC) is a serious disease that affects the primary dentition of young children. ECC has been defined by the Academy of Pediatric Dentistry as "the presence of 1 or more decayed (noncavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in children from birth to 71 months of age"⁶ (see Figure 1). ECC is the most common chronic disease among preschool children; while the prevalence of asthma is 7% among 0 to 4



Fig 1: An example of ECC presentation.

year olds,⁷ the prevalence of ECC among 2-5 year olds was 22.7% in 2011-2012.¹ Overall disparities in oral health status and access to health care are substantial and largely attributable to socio-economic factors associated with race/ethnicity or poverty.^{8,9} ECC affects larger proportions of socially disadvantaged children; the latest report on ECC by poverty status and race/ethnicity showed that ECC is more frequent among low-income than among higher-income children (43.4 v. 13.2% respectively) and also more frequent among Mexican-American than among Non-Hispanic White children (42.6% v. 25.7% respectively).¹⁰ Uninsured children are five times more likely to have an unmet dental need than those with private dental insurance and four times more likely than those with Medicaid or other public dental insurance.⁷ Untreated caries is more common among racial/ethnic minority children ages 5-11 than among Non-Hispanic White children: the prevalence is 27% among Hispanics/Latinos, 18% among Non-Hispanic Blacks, and 39% among American Indian and Alaskan Native children, compared to 12% among Non-Hispanic Whites, with corresponding disparities in visits to a dentist.¹¹

Special populations have disparities, as well. Among the over 11 million children with special health care needs (SHCN), the prevalence of unmet oral health care needs is almost twice as likely among children with SHCN than their peers without SCHN.¹² Additionally, children with SHCN on public insurance are more than twice as likely to have unmet preventive oral health care needs than those with SHCN with private insurance.¹³

Dental caries prevalence among children 2 to 5 years of age increased from 24.2% in 1988-1994 to 27.9% in

1999-2004,¹⁴ but it declined to 22.7% in 2011-2012.¹ Despite this improvement, almost a quarter of the children 2-5 years of age are affected by ECC, and for 10% of 2-5 year olds the disease is untreated.¹ Left untreated, ECC can lead to severe tooth destruction and abscesses, necessitating costly therapeutic interventions even under general anesthesia. Poor oral health in children affects their quality of life,¹⁵ and poor dentition that had its origins in childhood may affect job opportunities and health status later in life. ¹² The U.S. Surgeon General's report on oral health in America cites tooth decay as the single most common chronic disease of childhood in the United States and estimates that 4 to 5 million children have dental problems so severe that they have trouble eating,

Figure 2. HEALTHY PEOPLE 2020				
ОВЈ. ОН 1.1	Reduce the proportion of children aged 3-5 years with dental caries experience in their primary teeth.			
Baseline	33.3 percent of children aged 3-5 years had dental caries experience in at least one primary tooth in 1999-2004.			
Sources: CDC/NCHS	National Health and Nutrition Examination Survey (NHANES)			

sleeping and learning.¹⁷ Furthermore, 51 million school hours are lost each year from some form of oral health problem.¹⁷

Underutilization of established approaches to prevent ECC

Healthy People 2020 (Figure 2) includes a goal to reduce the prevalence of dental caries among children 3 to 5 years of age to 30% or less, a 10% improvement from previous years.¹⁸ This goal should be feasible because there are established approaches to prevent ECC. Dental screenings and referral should be a part of the standard of care in the pediatric medical primary care setting.¹⁹ Regular use of fluoridated toothpaste has also been recognized as an effective behavior to prevent caries in primary teeth.^{20,21}

However, while evidence-based health promotion measures are effective, they often are not accessible or are underutilized. Fluoride varnish, which has been shown to prevent caries in primary teeth²² and to re-mineralize incipient caries,^{23,24} does not reach the majority of children for whom fluoride application is indicated.²⁵ Despite the serious effects and pervasive burden of ECC and inconsistent access to services, a recently published systematic review reports that there are limited data regarding strategies to prevent ECC in community health settings.²⁶

The Role for Pediatric Primary Care

Existing research shows that pediatric primary care would be prime grounds for intervention in oral health, especially to reach subgroups with oral health disparities and access barriers. At present, fewer than half of Medicaid-enrolled children ages 1-20 years receive at least one preventive dental visit a year.² The Affordable Care Act requires Medicaid to cover dental services and now includes pediatric dental services as one of the ten essential health benefits required to be offered in individual and small-group health plans sold through the marketplaces. However, a mandate to offer does not mean a mandate to buy, and many parents have opted out of a dental plan. Approximately 46 million Americans live in areas of the country, both urban and rural, where there is just one dentist per 5,000 people.²⁷ Moreover there is a shortage of dentists willing to accept Medicaid's low reimbursement rates for services performed.²⁸

Vulnerable children (i.e., racial/ethnic minorities, children with Medicaid or State Children's Health Insurance Program (S-CHIP) or uninsured, children living in rural areas, and those with developmental or acquired disabilities) have reduced access to dental services, but almost all see a pediatric clinician regularly for well-child care; 88% have at least an annual visit.^{29,30} Advice, screening, and referrals by primary care pediatric providers that are provided in an age- and visit-appropriate manner can go a long way in achieving this goal.³¹ Furthermore, a number of professional societies advocate this approach. The American Academy of Pediatric Dentistry,³² the National Network for Oral Health Access,³³ the Pediatric Oral Health Research and Policy Center,³ and the National Maternal and Child Oral Health Resource Center,³⁴ among others, all join the American Academy of Pediatrics in recommending integration of oral health promotion into the pediatric well-child visit, because the constellation of behavior change items grouped as anticipatory guidance have demonstrated ability to reduce gingivitis, prevent ECC, and improve general health and quality of life.³¹

The DentaQuest Study: Barriers and Facilitators to Integration of Oral Health in Pediatric Primary Care

In May of 2014, the Pediatric Oral Health Research and Policy Center of the American Academy of Pediatric Dentistry, sponsored by the DentaQuest Foundation, published a study of oral health in primary care.³ Participants represented the spectrum of pediatric care across a variety of practice types (public clinics, academic clinics, free or volunteer clinics, private practices, hospital-based and school-based clinics, and FQHCs). Information was collected about caries risk assessment, visual inspection/screening, fluoride varnish application, fluoride supplementation, oral health education, anticipatory guidance and referral to a dentist. Results focused on processes of care, including workflow, assessment tools, documentation, referral systems and relationships with dentists, and family response.

Results identified the following drivers of successful oral health promotion across types of practice: formal champions for oral health, delegation and integration of oral health activities, inclusion of oral health charting in the electronic medical record and the existence of a collaborative team. This comprehensive report formed the basis for our current investigation into specific barriers and facilitators of integration of oral health into pediatric medical practice in the FQHC setting, where socio-economic factors, cultural diversity, language barriers, resource constraints and low parental health literacy may create conditions, facilitators and challenges that are quite different from those found in private pediatric practices or in academic centers.

Federally Qualified Health Centers: A logical setting for integration of oral health into well-child visits

Federally qualified health centers (FQHCs) present an ideal opportunity to integrate oral health preventive services into pediatric primary care, because this setting is where the majority of vulnerable children already have regular contact with the health care system. These centers have been shown to successfully reduce health disparities among the most vulnerable subgroups while providing affordable, culturally-competent health services to underserved communities.³⁵

In 2011, 78% of the nation's FQHCs were providing some oral health services.³⁶ It is estimated that by 2019, FQHCs will be providing comprehensive health care, including oral health care, to 16-22 million poor and minority children in the US.³¹ Moreover, a recent review of state policy for the provision of dental services by non-dental health care providers found that the majority of states have a policy in place;³⁷ another study found that barriers to implementation can be overcome.³⁸ The American Academy of Pediatrics and the American Academy of Family Medicine have developed an initiative to promote oral health at well-child visits, as well.

All of these efforts are within the context of federal statute Section 330 requiring FQHCs to provide "primary health services," the definition of which includes "preventative dental services" [42 U.S.C. §254(a)(1) and §254b (b)(1)(A)(i)(III)(hh)].⁴ "Preventative dental services" are defined as including "oral hygiene instruction; oral prophylaxis, as necessary; topical application of fluorides; and the prescription of fluorides for systemic use when not available in the community water supply." [42 C.F.R. §51c. 102(h)(6)].⁴ FQHCs can also receive federal approval to provide "dental services other than those provided as primary health services," known as "supplemental health services" [42 C.F.R. §51c. 102(j)(6)].⁴ Required and supplemental services can be provided in-house or through contractual or cooperative agreements, in this case, with private practice dental providers

in the community [42 U.S.C. §254b(a)(1)]. All of these statutes point to the purpose of FQHCs: providing primary health services children and adults, including preventative dental services as part of basic services or extending to supplemental services, as well.

Our task, then, is to identify the factors that are associated with successful integration of oral health with children's medical care and the challenges to dissemination of best practices. In this report, we present the results of an investigation and analysis of conditions and contexts, attitudes, beliefs, resources and policies associated with oral health promotion practices in FQHCs along a continuum of integration. For this study, we selected three clinics in each of two East Coast states, representing a range from FQHCs with few services available and major barriers to integration all the way to FQHCs where pediatric and dental services are co-located and integrated.

Each FQHC has a unique identity, resource context, and a distinct population to serve. They differ in level of organization, organizational culture, environmental context, and the patient populations they serve. These differences are reflected in different histories of oral health experience. In some situations, primary pediatric medical care services and dental services are co-located; some have no dental services on the premises and no referral network in place; and in others, integration of oral health into pediatric medical primary care services has been attempted but could not be sustained, or efforts have been sporadic.

To integrate oral health services into primary care, particularly in the FQHC setting, efforts must go beyond prescribing a method to provide fluoride varnish or oral health education. In order to address major barriers (e.g., social, behavioral, economic, management) that impede effective implementation and sustainability of programs, it is necessary to understand the behavior of healthcare professionals and other stakeholders as a critical variable in the sustainable uptake, adoption, and implementation of evidence-based programs.^{39,11} In this report, we describe the unique situations of each of these clinics and identify challenges and successful strategies across clinics. We relate them to internal and external characteristics and make recommendations for best practices to make substantial inroads into the problem of oral health disparities among the families, who depend on these clinics as their primary source of health care and health promotion.

2. IMPLEMENTATION SCIENCE: A TOOL TO IDENTIFY BEST PRACTICES

Framework for Evaluating Oral Health Integration in Clinical Care

Ideally, necessary systems changes would simply happen, because they result in positive oral health outcomes, as evidenced by the substantial support for the effectiveness of fluoride toothpaste.^{20,21} However, in the complexities of U.S. health care delivery, diffusion of best practices is an active, not a passive, process, and it occurs most effectively when barriers and facilitators for conditions, such as oral health disparities, are analyzed for specific populations and addressed directly.⁴⁰ Pediatric practices routinely provide medical care to vulnerable populations of children, who do not have dental care. How can we best take advantage of the opportunities provided by these existing interactions? In this report, we share lessons learned from the experiences of clinics in two states that have had varying success with integration.

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

The transitional step from an evidence-based intervention to adoption in general practice requires both structural and contextual supports; it does not occur routinely or easily because of multiple interacting barriers. Cost factors, time and training requirements, and difficulty customizing an intervention to particular participants or settings that differ from the original research design have all been described as critical challenges.⁴¹

Delayed or failed transmission of science-supported interventions means a lost opportunity to address oral health problems among the most vulnerable of pediatric patients in the context of their FQHC medical home. In conceptualizing this study, we relied on the *Consolidated Framework for Implementation Research* (CFIR)⁵ to explain, understand and address the difficulties and successes encountered by parents and medical and dental clinicians. This model establishes four key domains for data collection and analysis of the process of adopting innovations in health care, with critical constructs specified and defined in each of the domains (see Figure 3). The first domain describes characteristics inherent in the nature of the desired activity—in this case, integration of oral health into pediatric practice. The second domain consists of the characteristics of participants that affect adoption of best practices, either positively or negatively. The third domain, the inner context, focuses on attributes of clinicians and internal systems that affect implementation, and the fourth domain, the outer context, consists of the global organizational and policy environment: structure, communication, climate, and culture. These four domains provide an organizing principle to investigate, report, and address the conditions that have the potential to affect adoption and implementation of an oral health strategy within the context of well-child care in a FQHC and disseminate best practices.

This report follows the constructs of the CFIR to identify attributes in each of these domains that predispose to integration of oral health into pediatric practice or act as barriers to integration. The graphic below describes the categories included under each domain. This theoretical approach provided a guide to both data collection and analysis.

Intervention Characteristics	Participant characteristics				
Source for oral health integration	Knowledge and beliefs about oral health				
Strength/quality of supporting evidence	Self-efficacy				
Relative advantage of integration	Patient identification with the organization				
Trialability (ease of piloting)	Personal attributes:				
Complexity of integration	demographic characteristics				
Cost of implementation	children's and parents' oral health status				
Outer Context	Inner Context				
Salience of patient needs	Structural characteristics				
Resources	Networks and communication				
Cosmopolitanism (prior collaborations)	Organization culture				
Peer pressure (competition, initiatives)	Implementation Climate				
External policy and incentives	Readiness for implementation				

Figure 3. THE CFIR DOMAINS

3. STUDY METHODS

Overview

We selected three FQHCs in State 1 and three in State 2 to represent a continuum of oral health integration into pediatric services. Over a six-month period, we examined and analyzed contextual, organizational and professional factors that may facilitate or hinder integration. We used a multi-method approach to ensure data collection represented a variety of perspectives and content areas:

- 1. Background information provided by Chief Finance Officers (CFOs) or their designates about population demographics, clinic financial and organizational structure, and resources;
- 2. Telephone interviews with key informants and clinic employees who fit the description of "decision makers, clinicians, and support personnel," e.g., FQHC directors, finance officers, medical director, physicians and nurse practitioners, nurse managers, medical assistants, and dentists; and
- 3. Systematic observations at each clinic, using a standardized checklist to gather information about the external neighborhood, general clinic ambiance, the physical plant, and the location and operation of the pediatric clinic and the dental unit, if applicable, at each site.

IRB approval under exempt status was obtained at University of Maryland and Boston University, where investigators were affiliated, and at the University of Baltimore where colleagues from the Schaefer Center for Public Policy, who conducted the key informant interviews, were located.

Background Information

Each CFO was given a preformatted spreadsheet (Appendix 2) and asked to fill out as many items as possible, including:

- Aggregate patient demographics
- Geographic and catchment area information
- Number and types of clinic personnel
- Administrative organization
- Operating budget and sources of income
- Description of oral health services (if any)
- Number of hours that dental services offered
- Number of dentists and dental support personnel (either on staff or in a referral arrangement)
- Number of dental treatment rooms
- Scope of dental services (in-house or co-located)

Key Informant Interviews

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

The study protocol included up to 42 participants, approximately seven from each FQHC, representing decision makers, such as FQHC directors, medical directors, clinicians, support personnel, and dentists at each center. Each clinic director provided a list of appropriate employees to interview for each role. The team at University of Baltimore then contacted individuals on the list, verified that they were willing to participate, and described the purpose of the study and the process involved. Those who agreed to participate were then contacted by the University of Baltimore Schaefer Center for Public Policy and completed an informed consent process that included both consent to be interviewed by telephone and consent to have the conversation audiotaped and transcribed. Interviews were conducted by the Schaefer Center for Public Policy at a time chosen by the participant, using a semi-structured interview schedule (see Appendix 3) to elicit:

- Relevance of oral health for general health
- Current oral health practices
- Degree of integration of medical services with oral health
- Feasibility of oral health interventions as part of pediatric primary care
- Acceptable methods to include oral health in well-child care
- Perceived facilitators for inclusion of oral health preventive measures
- Perceived barriers for inclusion of oral health preventive measures
- Potential strategies to address barriers

Direct observation

Observations were conducted over a 3-4 hour period at each site by study investigators and staff. Observers interacted with staff but did not have contact with patients. The direct observation checklist (see Appendix 4) included the following physical plant, workflow and patient throughputs:

- Clinic neighborhood
- Patient registration area
- Physical plant
- Distance between medical and dental units (if co-located)
- Ability of pediatric staff to chart in dental records (problem lists and flags)
- Ability of dental clinicians to chart in medical records (problem lists and flags)
- Prompts in electronic medical records for anticipatory guidance, referral, and referral tracking
- Oral health discussions occurring during medical appointments
- Number and type of medical and dental staff observed interacting with patients
- Distribution of preventive products and materials and familiarity with where they are stored
- Process for referrals for dental care
- Degree of coordination of medical and dental appointments (if services are co-located)

Analytic Plan

Data analyses were designed to achieve the aim of identifying the contextual, organizational and professional

factors, such as elements specific to FQHC organizational structure, staffing, patient and payer mix, community involvement, relationships with local professional societies, and differences in state regulatory and funding policies that may facilitate or hinder the integration of dental services in a pediatric medical primary care setting with an FQHC.

Background information from the spreadsheets on each clinic was entered into Excel spreadsheets and analyzed comparatively. Qualitative data from interviews and from the free-text items on the observation checklist were analyzed using established inductive coding methods and criteria to characterize: (1) important themes shared by all groups, (2) themes specific to each group, and (3) differences in the approach to and relative importance of these themes within subgroups. Digital audio recordings were transcribed and analyzed as follows. Investigators independently read through six stakeholder interview transcripts (two from decision makers, two from practicing clinicians, and two from staff assistants), underlining key phrases. They then met to achieve consensus on first-level codes (what the interviewees said). Two coders from the Boston University School of Public Health's Community Health Sciences Department attached these first level codes to quotations, using NVIVO 10[®] software. A consensus process was used to derive second-level codes representing aggregate areas of content from these standardized key phrases, and inter-rater reliability was assessed. Themes were identified using axial coding where the data are fractured in categories and then reassembled according to the identified themes.

Final analyses consisted of comparisons across the six sites looking for concordance and difference by site location (state, size of city and size of patient catchment area), by type of services provided by the FQHC, and by variations in intra-clinic organization patterns.

Thematic analysis was structured to fulfill two purposes: first, to identify and enrich constructs specified in the four CFIR domains and second, to allow new ideas to emerge across the semi-structured interviews with key stakeholders. Figure 4 illustrates this process.

Figure 4: From first-level codes to themes



From 1st Level Codes (meaning units) to Themes

4. RESULTS

SITE OBSERVATION DATA

State 1

Clinic 1A (Co-located, Integrated)

Clinic characteristics

Clinic A is located in a dense urban area one block from a race track. The surroundings reflect a distressed area as noted by trash in the streets, approximately one fourth of the row houses across from the FQHC are boarded up, and the stores for shopping one block away are either boarded up or are convenience stores. There is street parking; some of it is metered. The clinic is located one block away from public bus transportation. The physical structure is a converted school that has had an addition and partial renovation. There is no information desk or lobby. The front door is broken, and one must use an alternative entrance. A security person is near the door, who asks you to write down your name and who you are visiting. There are no wall decorations.

Patient characteristics

The community is over 90% African American with a significant population of Jamaican, Dominican and African immigrants. This area has been an economically distressed area for many years and has a high crime rate. Approximately 35% of those in the civilian labor force are employed, and the median household income is \$23,654.

Co-location of dental and pediatric units

Patients must take the stairs to go from the pediatrics area to the dental area. These stairs take patients from the main building to the add-on building. Patient registration is separate between medical and dental clinics, and there are no direct phone lines to pediatrics or to the dental clinic. There are separate waiting areas for medical and dental, with the medical waiting room having approximately 20 seats and the dental having 12 chairs in very close quarters. The pediatricians report that there are occasional lines for registration. The wait for the physician is generally 15 to 60 minutes. The lead pediatrician reports that they see 60-75 patients per day with a staff of 3 Pediatricians, 3 medical assistants, 1 nurse and 2 front desk staff. The dental clinic sees approximately 25 patients per day with a staff of 2 dentists, 2 dental assistants, 1 hygienist, and 2 receptionists. At this observation visit, there was a senior dental student present on a three-week service-learning experience. The dental clinic had paper charts and non-digital radiographs.

Integration of pediatric and dental services

Remarkably, given restricted resources, there is close coordination between the medical and dental sides. Upon the arrival of each patient for a medical appointment, a receptionist places a phone call to the dental clinic to alert them that the patient is in the building. The receptionist then fills out a "Dental Fast Track" form that gives the name, birth date, and insurance coverage of the patient being seen in the pediatrics clinic. This form is faxed to the dental clinic. After the medical appointment, all children with accompanying parents are walked to the dental clinic by a medical receptionist for their dental appointment. Children are seen in the dental clinic, at minimum for screening and topical fluoride treatment. Children who need further care are given additional appointments.

Systems issues: EMR, referrals, and organizational structure

The pediatrics clinic uses Citrix for electronic charting, with stations in each examination room. The computers are on movable pedestals. Citrix has several dental items that need to be reviewed at well-child visits with templates for dental anticipatory guidance, patients' last dental visit, and dental visit advised. There is no EMR system for dentistry.

In summary

Clinic A is located in a very economically disadvantaged urban center but has co-located dental and pediatric services, a high level of integration of oral health into pediatric care, with oral health templates within the EMR system used by pediatrics, but no opportunity for electronic crosstalk between systems.

Clinic 1B (Co-located, No integration)

Clinic Characteristics

Clinic B is located in a small rural town of approximately 246 people (2010 Census) that serves the neighboring small towns. The population is 87% Non-Hispanic White, 4.9% Non-Hispanic Black, and 7.7% of other races; the growing Hispanic/Latino population represented 2.8% in 2000 and increased to 8.1% of the population in 2010. The Clinic is located at the edge of town, across the street from well-maintained family houses and with small business a block away on either side; the back of the clinic is open agricultural space. The traffic on the street is limited to small vehicles, and there were no signs of public transportation. The area appears very safe for families. The one-story clinic was built in 2006; it has a modern design, with the windows shaped in geometric figures with colorful glass and decorative columns. The building is clean and well-kept. The clinic has artwork on the walls in the form of paintings and photographs. There was a profuse amount of educational material such as posters, brochures, charts, and an installation about beverages' sugar content. The front door leads to the waiting room; the medical unit is on the left side and the dental unit is on the right side. The clinic has medical and dental units co-located seamlessly with no division between them. There is no pharmacy; patients go to another town eight minutes away by car for prescriptions. There is no security guard or main desk, but there are information bulletin boards outside the door and at the entrance pointing to the main services, medical and dental. Outside the clinic, there are attractive gardens and an ample, well-marked parking area.

Patient Characteristics

A large proportion of patients, close to 70%, are monolingual in Spanish. The center has bilingual receptionists in the medical and dental area as well as bilingual medical assistants and a hygienist. Educational material is offered in English and Spanish. The website, however, is only in English.

Co-location of dental and pediatric units

The medical and dental units are located next to each other without any separation. Each unit has its own registration process and dedicated reception desk, but they share the waiting room, which is a large open space divided in 4 areas by the distribution of the chairs: 15 chairs in each of 3 areas and 4 chairs by the main door. At the time of the observation visit, there were 15 patients seated in the waiting room, but there were no lines at

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the registration desks. The waiting time for both medical and dental services was between 6 and 10 minutes; only dental patients presenting with an emergency would likely wait longer. The daily patient load in the medical side is 25 patients and for the dental side is between 15 and 17 for the dentists and 9 to 14 for the hygienist. The dental clinic is staffed by a general dentist and a hygienist. Neither the medical unit nor the dental units offer services after 4 pm or on weekends. The clinic accepts private, public and military health insurance for payment. Uninsured patients pay a sliding fee according to their income, and cash is accepted for payment. There is an office for financial services off the waiting room.

Integration of oral health into pediatric well-child care

Pediatric providers, who were certified to apply fluoride varnish, left the center. The center does not have a distinct pediatric suite. There was no educational material addressing oral health in the medical suites. Oral health information is provided and charted for "chronic care" of adult patients. Dental providers are allotted 10 minutes for self-management of caries as part of the ECC Collaborative Project with DentaQuest. Dental providers were aware of the app "Dr. Bicuspid" and used it on their phones.

System issues: EMR and referrals

The EMR systems used for medical and dental services are not compatible beyond sharing basic information. The center is considering acquiring a system that will connect both. There are three mechanisms to refer patients for dental care: the medical providers can place a note in the electronic record and send a message to the dental providers through the computer, the patient is asked to check in at the dental front desk, or the providers communicate directly. There is no record of the last two forms of referral in the EMR.

Summary

Clinic B serves mainly Spanish speaking patients in a small rural area; it has co-located dental and pediatric services that are not integrated, and providers who were certified to apply fluoride varnish have left the center.

Clinic 1C (No Co-location, No Integration)

Clinic characteristics

Clinic C is rural and in the center of major lake and ski attractions. There are approximately 2,000 patients and the clinic receives them from a four state catchment areas. The closest other FQHC is located 50 miles away, and there is no public transportation. The physical structure is very attractive, located on a hill. There is a large parking lot for patients. The building is less than 10 years old. It has a large attractive waiting area, well-decorated in a "rustic" motif. There are two receptionists. Clinic staff report that they have an "enrollment team" for financial services. There are attractive wall decorations and brochures on racks. There are 7 large, well-equipped examination/minor surgery rooms, all with computers on cantilevers stands.

Patient characteristics

The racial makeup of the town as well as the patient population is around 98.0% Non-Hispanic White. The total number of patients is 3,672, with children being only 10%. The payment status of the patients is about 20% uninsured, 20% Medicaid, 28% Medicare, and 30% other third party.

Colocation of dental and pediatric units

There is no co-located dental practice.

Integration of oral health into pediatric well-child care

There were only two pediatric patients registered during a four-hour visit. There does not seem to be any effort to integrate oral health into pediatric programs. There is no literature about oral health and no posters on the walls related to oral health. At present, there are no oral examinations of children or fluoride applications.

Systems issues: Organizational structure, EMR, and referrals

The Chief Medical Officer has been employed for one month at this clinic. The clinic presently does not have a CFO. The CEO is physically located in a southern state. Presently, this FQHC does not have a web site. The medical side has a well-functioning electronic medical record but does not include prompts for questions regarding oral health. The clinic has a referral agreement with a local dentist but only for adults who have significant chronic medical conditions and do not have a dentist. The clinic does not refer any children to dentists because they report that Medicaid covers children.

In summary

Clinic C is a rural FQHC in an area with almost exclusively Non-Hispanic White patients. They have a small patient pool, 10% of which are children. The physical structure is very attractive. There is no co-located dental practice. The clinic does have an agreement with a local dentist, and adults that have significant chronic medical conditions and who do not have a dentist are referred to this provider. The clinic does not refer any children to dentists.

State 2

Clinic X (Co-located, Integrated)

Clinic characteristics

Health Clinic X is situated within a town with a population of approximately 40,000 people, drawing patients from a nearby town of approximately 55,000 people. The surrounding area includes small-business storefronts and appears safe for families, although there are many buildings with boarded-up windows throughout the area. There are no signs of public transportation around the clinic, though there is metered parking and a municipal parking garage that charges less than a dollar per hour. The health clinic itself is a four-story renovated brick building with modern facilities, including a co-located pharmacy and a co-located dental clinic, which has brightly-colored and state-of-the-art equipment. Upon entering the clinic, there is a security guard but no reception desk, and no signs or maps to help patients navigate to the various departments. While there is minimal artwork around the clinic, there was abundant evidence of health-promotion materials, such as posters, brochures, and nutrition education displays.

Patient Characteristics

The health center serves a large Spanish-speaking population and has an apparent commitment to serving these patients, as there are translation services available by telephone and the health center's website is offered in both English and Spanish. The clinic has adopted a preference for only hiring Spanish-speaking medical assistants, so that all medical assistants are bi-lingual, though some nurses and most pediatricians are only

English-speaking. Also, many of the health-promotion materials (i.e., posters and brochures) are offered in either English or Spanish.

Co-location of dental and pediatric units

The dental clinic is located on a separate floor from the pediatric department, separated by one floor (approximately 3.5 flights of stairs). Patient registration is not centralized, and there is separate registration and separate waiting rooms for the pediatric and dental clinics. Both waiting rooms for pediatrics and dental are large (>15 chairs), though at the time of the visit, five chairs, at most, were occupied in either waiting room. There was no evidence of lines to wait in, either at registration desks or at the central security desk in the lobby. Both pediatric and dental staff reported fairly short wait times to be seen upon arrival, with pediatric staff reporting 10 minutes on a busy day and dental staff reporting 15 minutes. The pediatric department reported a patient panel of 20 per day per provider (usually four providers), for a total inflow of 80 patients per day; the dental department reported a panel of 10 per day per provider (eight on a busy day for a total inflow of 80 patients per day. The dental clinic is staffed by resident dentists and dental faculty, though all patients are seen by residents, supervised by faculty members. Dental residents also serve on-call rotations at a nearby hospital. Both the pediatric and dental departments offer only weekday appointments; evening and weekend appointments are not available.

There is a Managed Care department across the hall from pediatrics for billing and Medicaid enrollment, though a separate billing specialist handles billing in dental. Public and private insurance are accepted in both the dental and pediatric clinics, and the clinic as a whole accepts patients without insurance, who pay cash or credit.

Integration of oral health into pediatric well-child care

There was evidence of some oral health activities in pediatrics in the exam room, as the pediatric provider asked two patients about their oral health concerns and advised the parent of an infant on the eruption of first teeth and teething practices, and discouraged bottle feeding at bedtime. Around the pediatric clinic, there was no evidence of oral health education materials except one oral health brochure in English about a child's first dental visit produced by the ADA in one exam room. There was no evidence of oral health brochures in the storage shelves for replacement brochures. There were ample posters about healthy eating habits (particularly avoiding sugary drinks) and one flyer with a Parent Daily Checklist, advising parents to floss their child's teeth as part of their daily routine. Pediatric providers are not allocated extra time for health promotion communication with patients, and providers were not familiar with any oral health smartphone apps. The pediatric department does provide fluoride, and staff was familiar with the storage of those supplies. Staff reported that fluoride varnish used to be delegated to nursing staff, but after training, is now an assigned task for medical assistants. Dental regularly gives gifts of toothbrushes, toothpaste, and floss, and staff is familiar with where those supplies were located. Staff in both departments reported collaboration, such as dental staff training nurses and medical assistants to apply fluoride or pediatric staff training dental staff on health conditions such as asthma and autism. Dental staff noted a concern that varnish is sometimes over-applied.

Systems issues: Organizational structure EMR, and referrals

The organization has been in existence for 40 years and has a medical home designation, but the CEO is new to the system, and prior to the CEO arrival, there was considerable pediatric staff turnover. The level of integration between pediatric and dental EMR was mixed. In the pediatric EMR, there was no template for oral health charting, though one pediatrician reported noting varnish or abnormalities in the teeth in an open field in the

EMR. There are no prompts for oral health charting or no checklists for anticipatory guidance. The pediatric department is, however, able to send a referral via the EMR to the co-located dental clinic. There is no tracking of follow-up of this referral, though pediatricians can see evidence of a visit when a patient comes in again, though no further details of that visit are visible. Dental staff reported tracking if a referred appointment was kept and if varnish was applied. Dental staff reported being able to see the EMR in pediatrics, particularly in cases of a pre-op, though reported not being sure if pediatric staff could see their records. Both departments used the same EMR software, which offers an opportunity to enhance integration beyond the current level.

In summary

Clinic X serves a rural area that is economically depressed but has co-located dental and pediatric services, a high level of integration of oral health into pediatric care, and integrated medical and dental records.

Clinic Y (Not Co-located, Integrated)

Clinic characteristics

Health Clinic Y is located in an urban town of approximately 109,000 people. The surrounding area, in the middle stages of gentrification, includes a variety of small-business shops and restaurants lining the streets, appearing safe for families. The streets and sidewalks are clear and free of trash and debris. Public transportation to the health clinic is available by bus. Parking is available for patients in the form of metered street parking and short-term and long-term garage spots directly across from the health clinic.

The health clinic is a newly renovated brick building with modern facilities and co-located pharmacy. Upon entering the clinic, there is a large wooden wall with the words 'welcome' engraved in various languages. A large reception desk, hosting two greeters, is located centrally on the first floor. The health clinic's co-located pharmacy, central patient registration, financial services, referral and enrollment departments are found on the first floor. Central registration, with private carrels and a spacious waiting area, works on a 'take a ticket' system. The referral and enrollment departments are separately located to the right of central registration with private carrels for patients. A security office is located to the left of the main reception desk and contains a large monitor with multiple views of the health clinic. A floor directory is easily visible and color-coded within each elevator. While there is minimal artwork around the clinic, the walls are brightly colored with large windows and natural light.

Patient characteristics

The health clinic serves a diverse population. The most common languages spoken are Spanish, Portuguese, and Khmer. Translation services are available by phone, and the health center employs staff members at every administrative and clinical level, who speak two or more languages, with staff speaking a total of 28 languages and over 80 staff trained as medical interpreters. The website is also offered in four languages including English, Spanish, Portuguese, and Khmer.

Integration of oral health into pediatric well-child care

While Clinic Y does not have a co-located dental clinic, there have been efforts to integrate oral health into pediatrics. All nurses and medical assistants in pediatrics are certified to apply fluoride varnish to patients. Staff was familiar with the storage and protocol for varnish application. A printout about fluoride varnish is posted in

each exam room's bulletin board and is also available as a handout to patients and their families. Pediatrics also has a printout list of local dentists to give to patients for self-referral. Pediatric providers are neither allocated extra time for health promotion communication with patients or are familiar with any oral health smartphone apps. A pediatric provider reported visually inspecting all patients' mouth when conducting well-child visits. Staff reported that the clinic is currently in the planning process of co-locating a dental clinic and estimates that they are around two years away from completing this project. The clinic is currently working on integrating behavioral health into pediatrics.

Systems issues: EMR software, referrals, tracking of referrals

Given that the health clinic currently does not have a co-located dental clinic, there is no pediatric and dental EMR to integrate. Pediatric EMR does not contain a template for oral health charting, although there is an examination of the mouth prompt and free-text comments section. There is no checklist or flag for oral health guidance. Pediatric providers use personal laptops when charting exams. For referrals, providers will give patients a printout list of local dentists and send them to referral services located on the first floor. Referral services, which have the same printout list of local dentists, will try to help patients and their families set up appointments. There are some instances in which some referred offices, particularly hospitals, do not allow referral services to set up appointment for patients, so it is the patient's responsibility to call. The pediatric department has one designated staff member that is responsible for "completing the loop" with referrals; however, all staff is trained to do this. Pediatric staff described that they generally receive consultation notes and other documents from referral clinics via fax. These documents end up in a bin and then get communicated to the appropriate provider. It was reported that there could be loss to follow-up of referrals due to patients not setting up or attending referred appointments, which is generally not communicated back to the pediatric clinic.

In summary

Clinic Y serves an urban area that is economically depressed, though gentrifying, does not have a co-located dental clinic, has moderate integration of oral health into well-child care, and no integration of medical and dental records. The health clinic is in the planning process of co-locating a dental clinic and is currently integrating behavioral health into pediatrics.

Clinic Z (Co-located, Not Integrated)

Clinic characteristics

Health Clinic Z is located within a town of approximately 90,000 people. A multitude of various shops line either side of the roadway, and the area around the health clinic has a heavy flow of vehicular traffic. Garbage and trash litter the sidewalks, and there appears to be homeless population residing around the health clinic. Public transportation is apparent in the town by bus and commuter rail. Parking is available, although limited, in the form of metered spots, municipal parking lot (\$1/hour or \$5/day), and curbside one- and two-hour unmetered parking spots. The health clinic itself is a hybrid of two buildings: a newly constructed site (completed in 2012) and a former department store building. Though connected via an entry lobby on the first floor, the buildings are essentially separate, as someone coming from the second floor of the newer building. The newer building contains a spacious centralized patient registration, with private carrels, on the first floor and a state-of-the-art

co-located dental clinic on the second floor. The lower level of the health center is used for health insurance enrollment services, where patients can enroll in Medicaid, and the Deputy Director reported very high demand for enrollment, with some patients lining up outside of the clinic before hours of operation. Administration and financial departments for the health clinic are offsite, located a couple of blocks down the road. Although there are two dental billing specialists in this offsite location, the dental department also has its own billing in the clinic. Public and private insurance are accepted in both the pediatric and dental departments, and the clinic accepts patients without insurance who may pay cash or credit for services. A co-licensed pharmacy, where patients of the health clinic get a discounted rate on prescriptions, is directly across the street from the clinic.

Upon entering the clinic, there is a reception desk and two greeters designated to direct patients and answer central phone lines. A floor directory is easily visible and color-coded, with colors representing medical teams integrated with behavioral health. There is minimal artwork in the lobby of the clinic; however, there is a variety of artwork in the pediatric clinic, some designed and painted by the staff. Around the clinic, there are many welcome signs posted in multiple languages, some health promotional posters, and a large quote on the lobby wall about the importance of health care for all.

Patient characteristics

The health clinic proudly serves a diverse population. The most common languages spoken are Spanish, Cambodian, Russian, and Arabic. Translation services are available by telephone, and the health center's website is offered in 52 languages. The clinic has a preference for hiring staff that are bi/multi-lingual and incentivizes those who speak multiple languages by offering a higher pay differential.

Co-location of dental and pediatric units

The dental clinic is located on the second floor of the newer building, while the pediatric clinic is located on the second floor of the older building, accessible to the dental clinic from the first floor and then taking approximately four flights of stairs or two elevators to arrive there. Patient registration is centralized for all departments, except the dental department, having its own registration. There are separate waiting rooms for both the pediatric and dental clinic. Both waiting rooms are large (> 15 chairs); on the day of the observation, six chairs were occupied by both adults and children in pediatrics and ten chairs with adult patients in dental. There was no evidence of lines to wait in either central patient registration or dental registration. Both pediatric and dental staff reported short waiting times to be seen, with pediatric staff reporting 10 minutes on a busy day and dental staff reporting 10-15 minutes. Pediatric staff reported a patient load of approximately 80 patients per day with four providers staffed (two providers work part-time for the pediatric clinic); dental staff reported between 100 patients per day on slow days and 160 patients per day on busy days, with 15 providers staffed (various specialties) and some dental residents from local dental schools. The pediatric clinic offers weekday and evening (Tuesday and Thursday until 7:30 pm) appointments to patients and also accepts walk-in appointments. The dental clinic offers weekday, evening (Monday, Tuesday, and Thursday until 8:00 pm), and Saturday appointments (8:00 am - 2:00 pm).

Integration of oral health into pediatric well-child care

There was no evidence of oral health activities or oral health literature in the pediatric exam rooms. The only oral-health-related material available in the office is located in the nurse manager's office at the front of the

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pediatric clinic. The handout, offered in both English and Spanish, includes brief information about oral health and the co-located dental clinic. A provider must get the handout from the nurse manager's office to give this information to the patient during the visit. Pediatric staff reported not having fluoride varnish for their patients but stated that they know of other departments in the health center that do apply varnish. Pediatric providers are not allocated extra time for health promotion communication with patients, though one pediatrician reported performing visual inspection; providers were not familiar with any oral health smartphone apps.

Systems issues: EMR software, referrals

The level of integration between pediatric and dental EMR is minimal. The clinics use different EMR software for medical and dental. In the pediatric EMR, there was no template for oral health charting, though there was a checkbox for "lips/teeth/gums" or diet or feeding practices, and a free-text comments section. Overall, there are no prompts for oral health charting or checklists for anticipatory guidance. Pediatric providers either use desktop computers located in their personal offices or personal-provider tablets when charting exams. Pediatric staff reported that they ask patients to self-refer to the co-located dental clinic. They give patients a card with the dental clinic's telephone number so that patients can call to set-up their appointment, though there are no procedures in place for follow-up on completed self-referrals. Dental staff reported that pediatric staff can set up task-referrals through their EMR that sends patient information and a note to the dental clinic; however, pediatric staff did not report this option. Dental stated that they could access the pediatric EMR through a special portal so that dental providers can check medical history and lab results pre-operatively. This cross-communication was not reported to be available vice-versa for pediatric providers.

Lack of integration of oral health education and services into Pediatrics

The dental clinic is aware of the efforts to integrate dental into primary care for other departments within the health center, particularly the Family Medicine department, but no integration with the pediatric department. Family Medicine, located on the first floor of the older building (one floor below pediatrics), has successfully piloted and integrated fluoride varnish into their well-child visits, but the number of children they see is limited. Overall, while Family Medicine has integrated oral health into their well-child visits, this is yet to be initiated within the pediatric clinic. Clinic Y also has an example of successful integration of behavioral health throughout the facility. One behavioral health provider is a member of a provider team, distinguished by a color code, visible on the signage in the lobby. The Deputy Director of the clinic expressed the success of this model and a high demand among patients for behavioral health services.

In Summary

Clinic Z serves an urban area that is economically depressed, but has co-located dental and pediatric services, minimal integration of oral health into well-child care in the pediatrics department, and minimal integration of medical and dental records. The clinic has, however, successfully integrated oral health in Family Medicine and has a successful model in place for integrating oral health should that become a priority.

COMPARISON OF CLINICS BY LEVEL OF INTEGRATION

Unexpectedly, neither structural determinants, patient characteristics, nor geographic location appeared to predict the level of integration of oral health care into pediatric well child services in these six federally qualified

health centers. Within each category of level of integration, clinics differed in size, length of time in operation, and ability to retain pediatric staff. Moreover, the size of the catchment area differed, as did patient composition (race/ethnicity, language and culture and number of patients in each age group). Clinics at both ends of the spectrum for integration reported similar numbers of patient with Medicaid insurance, and one of the clinics with the highest rate of private insurance (and presumably capacity to comply with dental referrals) was least likely to provide pediatric patients with dental referrals. One clinic with minimal integration only provided dental referrals for adults. There were collaborations with schools of dentistry at both ends of the spectrum. There was a high percentage of unreimbursed care at both ends of the spectrum, and clinic operating budgets differed considerably within category of integration. Table 1 describes the attributes of each clinic by level of integration and allows for a visual comparison that correlates well with the narrative data described above, which was collected through direct observations at each of the sites.

Characteristics	Advanced Integration		Progress to Integration		Minimal Integration	
	Clinic A	Clinic X	Clinic B	Clinic Y	Clinic C	Clinic Z
Patient Characteristics						
# patient by age group (years)						
0 through 5	3077	n/a	2532	3208	94	3005
6-13	2374	n/a	4783	3256	175	3874
14-21	2011	n/a	3165	3360	265	4581
Ethnicity of Children (%)						
Non-Hispanic White	4.0	10.3	87.0	28.0	100	18.3
Non- Hispanic Black	88.0	2.0	4.9	10.0	0	10.7
Hispanic/Latino	3.5	79.5	8.1	30.0	0	48.9
Asian	0.8	1.9	0	27.0	0	6.2
American Indian, AK Native	0.1	0.3	0	0	0	<1
Other	3.6	6.0	0	5.0	0	15.9
% families w/Limited English Proficiency	4.0	Many	70%	45.0	0	55.8
Payer source for children (%)						
Private	9.0	3.1	6.0	16.0	30.0	n/a
Medicaid	87.0	96.1	75.0	82.0	50.0	n/a
CSHCN	0	0.6	9.0	0	0	n/a
Self-pay	4.0	0	10.0	2.0	20.0	n/a
Clinic Characteristics						
Geographic location	Urban	Small City	Rural	Urban	Rural	Urban
Population size (catchment area)	208,979	40,249	90,000	200,000	100,000	90,000
Yrs. in operation	42	40	30	40	8	40
Operating budget (\$)	11,379,930	35,377,000	14,295,837	34,455,833	n/a*	65,955,536
% of unreimbursed care	13.6	0	10-15	9	7	12.0
Length of time CMO in office (years)	8	0.5	2	15	<1	4
Staff turnover: # (proportion employed > 1 yr)						
nurses	2 (100%)	3 (33%)	3 (100%)	n/a	2	20 (most)
medical assistants	7 (50%)	4.5 (22%)	2 (50%)	n/a	1	20 (most)
clerks	4 (50%)	3 (67%)	4 (50%)	n/a	1	5 (most)
pediatric clinicians	11 (80%)	5 (40%)	2 (100%)	n/a	2	16 (most)
Co-location: pediatric and dental clinics	Yes	Yes	Yes	Ńo	No	Yes
Collaborations with Dental Schools	Yes	Yes	Yes	No	No	Yes
Clinical Service Capacity						
Medical Record Charting						

Table 1. Comparison of clinics by level of integration

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

EMR system: medical	Yes	Yes	Yes	Yes	Yes	Yes
EMR system: dental	No	Yes	Yes	Yes	No	Yes
Dentists can add to medical problem list	Yes	No	No	No	No	No
Fluoride varnish application	Yes	Yes	Yes	Yes	No	Yes
Who applies fluoride varnish	Dental	Both	Dental	Both	Neither	Dental
Referrals						
clinics co-located on site	Yes	Yes	Yes	No	No	Yes
network with local dentists	No	Yes	Yes	No	Yes	In-house
Use of smartphone text reminders	No	No	No	Yes	No	No

*n/a = information not available

INTERVIEW DATA

Characteristics of Participants

Knowledge and Beliefs About Oral Health

The general consensus among respondents about the importance that parents assign to oral health is that 'It is not in their top ten,' but there is a wide range. Some parents are said to be aware and interested, but for others, this is a new topic.

I guess they all want to take care of their kids to the best of their abilities, but maybe that [oral healthcare] is not the first thing they think about in their everyday healthcare. [Nurse]

Parents are 'typically more concerned with medical health,' and 'they have other things they are concerned about.' Oral health becomes an issue when:

The child can't eat, and it just becomes too bothersome to deal with any longer. [COO]

I think it's not important until it's a problem, and then it's very important, like most medical care unfortunately. [Pediatrician]

A lot of families...feel like if there is a once-in-a-blue-moon screening at a school or the Cool Smile type of clinic...they can check dental off the list because they brought the kid to something. But the kids really have not had what they need, which is comprehensive dental care. [Pediatrician]

A family physician made an important point about generational influence:

But then so many of our adults have really bad teeth to begin with, and they grew up in a culture that didn't put a high premium on preventive dental care. [Family Physician]

And from another clinic with a high proportion of recent immigrants:

There's a lot of grandparental influence. So I think any change would have to include the entire family, including the grandparents in the discussion. [Pediatrician]

Misconceptions about the importance of baby teeth are prevalent:

When you tell them they have to take care of their baby's teeth, they say 'Oh, they are going to lose them anyway,' so they might as well wait or 'I think she's too young.' They want to delay. [Chief of Pediatrics]

There was also a lot of concern about family attitudes toward oral hygiene and feeding practices:

Parents...just don't have a clue....Baby bottle tooth decay [is] awful, just rampant. They don't admit they put the baby to bed with the bottle, but you know that they do because you just see the powder in the mouth clearly. Kids look me right in the face and say, 'I don't have a toothbrush,' and the mother immediately says, 'Yes, you do,' and the child says, 'I don't know where it is.' [Nurse]

Many practitioners pointed to a lack of knowledge:

A lot of parents understand about the bottle and cavities, but they don't realize how quickly it can become a problem. And I think a lot of families know about soda, but maybe less education has been done about sticky foods, flossing. [Pediatrician]

I don't think they understand the relationship between juice and teeth and the relationship between their own oral flora and their kid's [flora]. [Pediatrician]

And a lot of people are afraid of fluoride. [Nurse Practitioner]

Self-efficacy

Clinicians spoke about low health literacy, difficulty reading in the language of origin, and limited English proficiency. They also mentioned poverty, transportation problems, and competing concerns that result in a high no-show rate. The solution clinicians proposed was to bolster parental self-efficacy through education at the time of the visit:

If [we're] able to capture that audience and discuss with the moms and the dads, parents and guardians, then [we] can educate because that is really the biggest problem, just the lack of education about it [oral health]. [Chief Operations Officer]

Patient identification with the organization

In each of the clinics, CEOs, COOs and providers said that 'Patients feel comfortable with the medical doctors and the dentists taking care of them.' [Dental Associate Director]

I wouldn't call it a fun place, but it's very welcoming, and a very, I think, uplifting environment that we've built....there's a fair amount of trust and respect for the pediatrician, and if you can integrate, promote and educate at that moment about dental as part of our team, I think most of our parents will appreciate that. [CEO]

And I think a lot of our parents respect our pediatricians, and then if it came from a pediatrician, it would hold more weight in terms of looking at teeth. [Nurse Manager]

I think what comes out of the physicians' and nurses' mouths in the well-child visit holds a lot more value with the patients than brochures...This population very much accepts what the pediatrician says...because of the esteem that they hold this health center [in]. The health center has been around for 40 years, and we are probably the best-known and most-trusted entity in the city...so that goes a long way as well. [Pediatrician, COO]

The majority of people like the way we treat them. You know, we try to be personable. Show them that we care for them in their overall health and as a person. [Dentist]

Other Personal Attributes

The majority of families who use the clinics in our study are economically disadvantaged, and it is likely that parents cannot afford toothbrushes and toothpaste. Many are recent immigrants, and in some clinics, most speak a language other than English. Some clinics report a transient population or parents engaged in migrant labor. A large number of parents have had only a few years of schooling. In rural areas served by several of these clinics, water is not fluoridated, and in the cities, parents are reluctant to use the city water. For many parents, taking good care of children means pleasing them with sweet-tasting drinks, adding sugar to milk, leaving a bottle in the bed at night so the baby will be happy, and in some cultures, prolonged bottle feeding and reliance on milk is a major component of the diet. Clinicians felt that parents wanted to do a good job but encountered barriers and were ill-prepared because of low language literacy and health literacy. Most saw oral health education as an important role for clinicians, and many described efforts to understand family needs and conditions through the patients' eyes:

Most of our providers appreciate that people from different countries and cultures have different views about a wide variety of things, so I think we are sensitive to that. [Family Physician]

Characteristics of the intervention

For our purposes, the 'intervention' is integration of oral health prevention into well-child care. In the CFIR model, intervention characteristics are defined by eight key sub-constructs: source, strength and quality of evidence, relative advantage, trialability, complexity, design quality and packaging, and cost.

Source: The perception of key stakeholders about whether the intervention is externally or internally developed

Professional organizations in both specialties endorse the inclusion of oral health education and prevention in pediatric well-child practice. This is further reinforced by federal statutes stipulating inclusion of preventative dental services in the definition of required primary health services provided by FQHCs.⁴ Within pediatrics, there is precedent for targeting prevention issues, and pediatricians regularly provide anticipatory guidance about injury prevention, nutrition and feeding practices, and norms for growth and development. Yet specialties of pediatrics and dentistry are separated by different educational trajectories, content areas, skills sets, supervising

bodies and reimbursement mechanisms, and questions remain about how to best reach children early for oral healthcare. Pediatric clinicians reported a range of perceptions of responsibility across the categories of integration. In clinics A and X, each with advanced integration, pediatricians reported talking with parents and children about bottle practices, inspecting the mouth, oral hygiene and brushing techniques, making brushing a game, regular visits to the dentist, avoiding sugary drinks, and getting fluoride applications. They do a basic inspection of the mouth, describe the importance of familiarizing children with a dental assessment exam and with what to expect when they see the dentist, and ensure access to fluoride varnish application. But even in these more advanced clinic settings, there are questions about the amount of time required and the obligation to educate about oral health is seen as an external directive. As a dentist in Clinic A said, speaking about clinicians in the co-located pediatric clinic:

I don't know if they would have any time to do any educating with the parents. I really don't see them as able to do just too much...Potentially, maybe you have an 'opt.' [Dentist]

One of the pediatricians at Clinic X reminded us that the Bright Futures manual on anticipatory guidance is four volume sets (about 800 pages), and many items demand attention. A nurse at Clinic X wasn't sure how to integrate oral health into other health education or how it would be received:

I honestly don't know how that would fit in there...if I'm doing an asthma teaching, and I say, 'Hey let me look in your kid's mouth, too,' I think that would be a kind of awkward situation. [Nurse]

And in Clinic X, with a co-located dental unit, a pediatrician talking about recommendations to see the dentist said:

They get fluoride before we even get in the room, typically. And I think that would be a great opportunity to talk to families about dental care. I don't think there would be training [among the nursing assistants who apply varnish] to do that...and maybe that's a missed opportunity. Yeah, before the age of three, that's one of the recommendations we still don't do. [Pediatrician]

In the clinics with moderate integration, the focus is on education and referral and an effort to provide fluoride varnish, but clinicians admit that the resources are just not there to get every child into the varnish program. One Chief Medical Officer from a clinic with moderate integration described multiple efforts to obtain reimbursement for oral health education and then went on to say that:

Sometimes it [the preventive dental questions] is a part of the pediatric visit, but sometimes it's a very small part. It gets overlooked. In some ways, it probably doesn't get the time it deserves. [CMO]

In the clinics with minimal integration, there was general agreement that oral health is important. In one instance, the CMO said that preventive guidance about oral health was at least as important as a physical exam. However, the clinicians might leave oral health prevention for the schools:

I would hope that in the schools, starting in preschool, that oral health... is part of the curriculum [Family Physician, CMO]

or leave it up to the parents to report a bad mouth odor:

If we notice there's a problem with dental hygiene, we talk to the parents. [Nurse Practitioner]

Strength and Quality of Evidence

Strength and quality of evidence is defined as the stakeholders' perceptions of the quality and validity of the evidence supporting the belief that the intervention will have desired outcomes.

The key professional organizations have oral health prevention guidelines posted on internet sites and through their own publications. Interestingly, both administrators and clinicians knew that the American Academy of Pediatrics guidelines existed, but 'had not had an opportunity to read them.' When asked about the content of the recommendations and guidelines, a Chief Operating Officer responded:

Nothing specifically other than the fact that [oral health] is just a growing concern with the Affordable Care Act. There's a lot of push obviously for patients that are in medical homes as well as oral health home or dental home. [Chief Operating Officer]

One pediatrician could recite some of the recommendations but admitted that some recommendations were incorporated into the well-visit, while others were not:

Yeah, [a dental visit] before the age of three, that's one of the recommendations we still don't do. [Pediatrician]

A small number of pediatric clinicians had heard about guidelines through Head Start or at early childhood development conferences. One reported receiving an email update summarizing the content of PACT, but no one could describe recommendations for an oral health prevention program with certainty.

Relative Advantage of Implementing an Integration Program

Clinicians were concerned about their patients' poor hygiene, abscesses, surgery to remove affected teeth, pain requiring visits to the emergency department, effects on growth and development, problems with school function, and situational depression related to being shamed. A nurse put it succinctly: 'The mouth is the opening to the rest of the body.'

One pediatrician summed up many children's experiences:

If you're in pain...it's hard to focus, and sometimes it's hard to behave well. If you have an infection and you are miserable, then the rest of you is uncomfortable, and you can't really function the way you want to. [Pediatrician]

Both CEOs and clinicians cited the financial costs involved in allowing poor oral health to progress and a belief that prevention is economical, but several clinicians mentioned the difficulty of referring young patients to a dentist whose staff may be unfamiliar with the recommendations to start assessment and treatment early.

Despite the importance pediatricians allocated to oral health prevention, they were not well-informed about connections between oral health conditions and medical conditions. A few cited infections and asthma, ulcers in the mouth, skin diseases, allergies, enlarged tonsils, and a link between the poor nutritional habits that contribute to caries and childhood obesity and diabetes rates. Among difficulties associated with prevention, they raised a very important point inherent in all prevention efforts: neither parents nor children understood the consequences over time of poor oral health. They reported that most parents thought that children did not need to see a dentist until age seven or eight and considered education of parents an important part of pediatric well-child care:

If we can see them young and talk about it, hopefully we're making...behavioral change so that they don't suffer...multiple caries and all the problems that you can also associate with poor dental hygiene. [Nurse Practitioner]

Trialability: The ability to test an intervention on a small scale and reverse course if needed

Several factors were mentioned to suggest that a trial of integration might be possible. The first factor is common values. In general, everyone agrees that prevention is an essential part of well-child care, because 'We focus on children,' and because, as one CEO said, 'I think it results in a win for all.' Another CEO from a currently non-integrated clinic made a strong statement of commitment:

The point of a health center is to bring all areas of health into one global visit and address all of those things, regardless of the time or the cost that is involved. [Chief Compliance Officer]

Second, many interviewees could envision how this change might happen. Interviewees across clinics and stages of integration made similar comments about what would be required for a trial: leadership from the CEO, selection of a 'designated hitter' or champion to lead the effort, and training and support for staff. It was also seen as important to include the clinic advisory committee and the quality improvement committee in the decision-making process.

Complexity: The perceived difficulty of intervention

Interviewees pointed out several aspects to the complexity of integration. Space would need to be allocated for educational activities. A care coordinator would have to be selected to coordinate patient movement back and forth between pediatric and dental clinics. Duties might include setting up referral appointments, reminders to parents, and in a co-located setting, actual navigation of a labyrinth of corridors might be necessary for patients to get from one clinic to another. Administrative duties on the clinic level might include setting up trainings and making sure educational materials are available and setting up meetings for quality monitoring. The billing department needs to be involved in reimbursement issues for fluoride varnish. Several committees would have to review new protocols and forms.

The biggest concern was finding the time to provide oral health guidance:

I don't know exactly if there would be the time to answer questions regarding oral health or demonstrating using a toothbrush when there are a lot of other questions that come up about physical well-being, sometimes behavioral well-being, all of that. [Nurse]

Cost

Financial concerns about paying for extra staffing or for dental services are a big barrier to clinics that do not have an affiliated dental program:

The problem is there's lots of good problems needing lots of extra money, and there's not a lot out there. I don't know of any local foundations that are interested, unfortunately, in oral health. It is a priority in our state, though. [Pediatrician, COO]

A daunting financial negative was expressed by one CEO, who when asked if they had money for time, space and brochures, simply said, 'No, we don't!' Others expressed worries about no shows because of low parental priority and the 'financial beating' that might result. Others were concerned about incorporating fluoride application into an existing sliding fee schedule.

On the other hand, clinicians said:

Costs? Other than it might take me an extra three minutes or so, not significant. I mean, it might slow me down fractionally, but I don't think so. [Nurse Practitioner]

It doesn't take that long to ask the questions you need to, because the counseling you are doing, technically, we should be doing it anyway. So I don't think there is a huge financial burden in there. [Physician]

And specifically about the cost of fluoride varnish:

We're a health center, so most of our kids have Medicaid, and Medicaid pays for varnish application, and I think it's for 20 something dollars. We apply the varnish but it is quick and easy. So I don't think ...cost is a barrier. [Family Physician]

This impression was confirmed by a CEO, who mentioned that Medicaid sent a list of kids who did not get varnish at their visits:

They're actually telling us how much money we are leaving on the table. I think that's a nice incentive for us to be sure we are doing a better job. [CEO]

This is not the case, however, in the other state we analyzed for this study, where reimbursement is standard regardless of the level of intensity of the visit, but, said a provider, 'That would not be something we would not want to do for that reason.'

Inner Context

Structural Characteristics: The social architecture, age, maturity, and size of an organization.

Structural characteristics typically focus on quantitative measures that describe the interaction of differentiated groups within an organization. Team stability (low turnover) is an indicator of implementation success, while centralization (concentration of decision-making autonomy at the top of an organization) is often negatively associated with innovation. The idea of coordination of differentiated groups to produce a holistic service has been the focus of the patient-centered medical home movement, under the ACA. Respondents reflected their understanding of this approach and noted the importance of a "team" mentality throughout their staff (see Culture). Two respondents summed up the value of the medical home model and the benefits of care coordination:

The fact that we are a medical home, we look at all issues that the child...and take responsibility for the child as a whole, not just for their physical well-being. We are their PCP, and I think it benefits the child because they get continuity of care with us...This, in turn, gives us a healthier child with a healthier mouth. [Nurse Practitioner]

Care coordination, I really believe, is key to the patient education, to helping folks get into care. I really think, across the board, it's going to improve the quality of care for the patient. [Senior VP of Outreach]

Clinics were compared on quantitative measures by level of integration (see Table 1). Along the continuum of integration, there were no apparent differences in the age of the FQHCs included in this study. Most sites were long-established institutions, with all but one center having 30 or more years in operation. One Chief Compliance Officer at a clinic with minimal integration commented on the value of longevity, noting how the lack of longevity has affected the desire for co-location:

Eventually, we would like to be able to refer them down the hall to a dental operatory where they're able to have those dental needs met. But we are a rather young organization, almost eight years old, and that opportunity just hasn't presented itself yet. [Chief Compliance Officer]

There were also no notable differences in the size of the pediatric population served, with the largest patient volume around 11,500 and the smallest around 7,500. The clinics with minimal integration had both the highest volume and also the smallest. The size of staff roughly correlated with the size of patient volume at all clinics. There was a wide variation in operating budgets, with the more integrated clinics having the smallest (11 million) or average- (\$35 million) sized budgets and the minimally integrated Clinic Z having the largest budget (66 million).

There was, however, significant staff turnover at most of the sites, which could be a barrier to successful integration. The most integrated sites reported varying levels of turnover, with 100% of nurses at Clinic A having more than one year employment compared to only 22% of medical assistants at Clinic X. Of the four categories of staff at the two clinics with advanced integration, only two groups of staff at Clinic A and one group of staff at Clinic X had more than 50% of staff with more than one year of employment. One dentist at a clinic with advanced integration spoke to the issue of turnover:

We have dental assistants. They'll come and then they'll stay for a while and then they'll get a better opportunity. [Dentist]

For the clinics with minimal integration, Clinic C did not report the percentage of staff with more than one year of employment, though Clinic Z reported that 'most' staff had more than one year.

Networks & Communication

These connections between 'individuals, units, services, and hierarchies' lay the foundation of cohesion (or lack thereof) in the setting for implementation. This construct captures the internal climate of an organization in terms of information sharing, social capital (the quality and extent of relationships), bonding of individuals within an organization, the sense of 'teamness' or 'community,' the quality of formal and informal communication, peer collaboration, making staff feel welcome, open feedback and review among peers and across the hierarchy, the presence of a shared vision, and communication about mission and goals. Having networks in place and an open and accessible flow of communication between those networks contribute to the effectiveness of implementation efforts.

As healthcare moves to a patient-centered medical home, the need for the ease of communication remains increasingly essential. Each FQHC is either an established medical home or on the path to becoming a medical home; therefore, the value of communication among different levels and specialties of care is a priority across the continuum of sites in this study, whether that was with a co-located dental clinic or clinics that collaborate with outside dental practices in the community, where patients are often referred.

Evidence of the idea of a medical home and a team-centered approach to healthcare delivery appeared in a number of interviews:

The patient-centered medical home, that team model, that team approach to care regardless of what other type of care they're going to receive, really breaks down some of those barriers in terms of sharing information...I think it opens up the collaboration between the two lines of service, if you will, within at least our organization. [Chief Operating Officer]

Because we are all at the same table, we can make sure that the collaboration is going on. [Nurse Manager]

So I do my part or part of my part, I can say. I guess I should say it like that. My part because we are overall a team. [Chief Dental Officer]

I've always enjoyed the idea of a dental office and a pediatric office working together, side by side, in the same office, if you will. I've always loved that idea because we go hand in hand, hand in hand. [Dental Hygienist]

I would say our providers are fairly active because there's somebody from each part of the office that participates as QI and PCMH, so I think that oral office works as a team. We're very team-based, driven,

and we all work together, so I think that we have a very large group of enthusiastic individuals who really want to make a difference. [Executive Assistant]

...because oral health is ultimately tied to medical health. If you have bad teeth, you can get a bad heart, that kind of thing. I don't think people realize that. So, you know, as a team-based approach, if we're all working together, it's for the benefit of the patient. [Registered Nurse]

Overall, employees across the continuum of integration valued internal communication and saw the importance of it in terms of working together on new or existing initiatives, sharing resources, and interdisciplinary collaboration for diagnosing or understanding the context of a patient's family life or illness:

Well I have to talk. I have to get in front of them and talk to them. I think that open line of communication is so important...I think if we had open lines of communication to stuff with each other, then whatever resources I have, I forward to them and vice versa. [Chief Dental Officer]

They may have a rapport with the family. They may know the family situation a lot better than I am. So if they can give me a little bit more background on the patient on what's going on then that can help me as far as treating the oral health patient. [Chief Dental Officer]

When commenting on having team leaders to implement oral health activities in pediatrics, three dental staff members from a clinic with advanced integration said:

That would be good because there'd be somebody from medical and somebody from dental, and they can talk together among themselves and they know what's going on instead of nobody knows nothing. [Dental Assistant]

So it's always good to have someone there who focused on it [oral health] and will ask questions about whether it [oral health activities] is done and what needs to be done and how it should be done. And then communication with the clinician as well as the oral health department. So it helps a great deal to have communication between departments. [Dental Director]

Sometimes there are certain challenges when people don't work in teams. [Dental Office Manager]

Sites with more integration reported face-time communication, usually in the form of regular meetings, crossdepartment in-services or presentations. These gatherings were seen as opportunities to communicate about topics relevant to both departments, share knowledge, and learn skills:

Actually what we've done here is we've set up some like lunch-and-learn sessions. It's kind of back with some training but even though we're one organization, not everybody knows each other. It's making sure that the dentists have some face time with medical providers and vice versa just so that they can get to know each other. [Chief Operating Officer]
I think that we would have to include dental, in maybe putting on some kind of services. What they do up there, what happens if we both as a team work together? That would definitely need to happen more often. It does now, but I believe that it needs to be consistent. [COO, Pediatrician]

But I think if we can have more of an open line of communication and we can train the medical providers on just how and what to look for at that initial well-child visit, that would be a start. [Chief Dental Officer]

One barrier to the content of these gatherings, however, was juggling the pressing priorities of the clinic itself. One staff member at a clinic with advanced integration put it this way:

We do have some staff meetings, some operations and meetings like monthly. But, it seems like we're busy trying to put out a fire as opposed to coming out with newer ideas for moving forward, oftentimes. And you think that putting out fires sometimes that would include improving ideas. But, I just think not enough time is devoted to training. [Dentist]

While this spirit of collaboration and open communication existed across the continuum, a large barrier to that sentiment was the integration of electronic medical records. At all of the sites (excluding one site, which uses paper records) that were co-located, two different EHR programs were used for pediatrics and dental, with minimal communication between the two systems or providers on either side reporting tedious separate login procedures to gain access to the other software program and patient records. Respondents reported these frictions in information sharing:

Any specialty, even like dental, dentistry, or oral surgeons, we hope to receive those reports and know what's going on with our mutual patients, which unfortunately is not happening. [Nurse Practitioner]

The dentists don't know what's going on in medicine, and the docs don't know what the dentists are doing to the degree that we should. You can get the information, but it's really difficult to do. [Pediatrician, COO]

Respondents, particularly at clinics with advanced integration, expressed a strong desire to have this crosscommunication and saw this as a logical connection, since both systems report on the health of the patient:

Ours desperately needs to have better integration between dental and all the medical stuff. It's set up because that's the way our health system is set up, and they should not be so separate. They really need to be that much better integrated. [Pediatrician, COO]

We have access now to pediatric records, but I think it will make a big difference that all the clinicians have access to all aspects of the patient's health. [Dental Director]

So you are always on top of everything. They could see what you're doing. You could see what they're doing. That would be absolutely wonderful. [Nurse Manager]

Some respondents across the continuum expressed doubts, however, as to the likelihood or feasibility of this cross-communication:

The oral health charting I am definitely going to say is out because we already have EMR established, and to plug in that piece is probably just not going to happen. [Nurse Manager]

Well, I think realistically we're not going to...I don't think there's much worth. I could be wrong, but I don't think there's much worth going on trying to really get dental medical records to talk to medical electronic records. [Family Physician]

I think it would be excellent, but I don't think the dentists are too excited about having these additional communications and writing...I never even thought about that, like having feedback. I think it would be a good idea, but the dentists probably wouldn't be excited about that either. [Pediatrician]

There were also doubts as to whether oral health is being reported in the pediatric records, regardless of crosscommunication, or if various levels of providers are aware of the charting procedures. Three staff members from clinics with advanced integration noted this:

I was looking into the kid's mouth and seeing gaping black holes in teeth, and I looked on the problem list and it did not say anything about caries. As a matter of fact, I went back and looked at the previous physical exam and nobody checked off caries. [COO, Pediatrician]

[Interviewer: Is oral health incorporated (in the EMR)?] I honestly don't know. It's never been explained to us if there is an area, not on the nursing level anyway. [Registered Nurse]

I've never seen a dental medical record, to be honest. I've never dealt with it either. I would imagine it's different. [Medical Assistant]

Some respondents were open to improving the pediatric medical record, with the help of dental:

I would love for our dentist actually to assist us with putting that part into our EHR. It would be wonderful. [Nurse Practitioner]

Providers at various levels of care delivery also reported boundaries on the amount of communication between departments, based on specialty.

We don't like to see kids that have abscesses, infections, that sort of thing. I would rather have the dentist be the one managing those, but if there's a situation where they have an abscess or disease, then we might have to play a role in it, if it's an emergency at night or whatnot. Communicating those sorts of things would be helpful. [Physician]

...as far as interdisciplinary approach with the dentist, I don't see that happening. They're not calling us and saying a patient's high risk, like we would call them if we found a patient that had a medical condition. That interaction yet. [Chief Dental Officer]

If the dentist was concerned about nutritional status...we don't often get that information. While we are all connected under the health center, we are sort of together but we are separate. [Nurse]

These boundaries were not unanimously reported, however:

Obviously, those folks that do a lot of the school-based work, they're certainly oral health champions at the pediatric level. We get a lot of feedback from them about what's going on at the schools and how often they see these children. [Chief Operating Officer]

All of these barriers to open lines of communication may result in pockets of unawareness within the staff and clinic, reported across the continuum. Providers at various levels of care delivery and in various specialty departments, despite the openness to communication, reported not knowing about the activities of their colleagues:

I don't know what the providers do in the exam room. [Lead Medical Assistant]

I can't speak for maybe our providers, because I'm not in the room with them. [Registered Nurse]

Well, I haven't seen what happens on the dental side because they are not here at my site. [Nurse Practitioner]

It's hard for me to say because I don't really know what they do. [Dental Associate Director]

Culture: The norms, values, and basic assumptions of a given organization:

Culture includes the 'less tangible organizational assumptions or thinking.' The term culture is widely interpreted and applied in the literature. For our purposes and in the CFIR model, culture is understood as 'relatively stable, socially constructed, and subconscious.' Climate, on the other hand, 'can vary across teams or units and is typically less stable over time, compared to culture.'

The medical home: A unifying philosophy among FQHCs

Values consistent with the medical home model were reported in the assumptions and thinking of each center, and there were no differences across the continuum of integration in the importance placed on integrated care. One example of such thinking is that a healthcare organization is established to address the overall health of patients, not neglecting any of their concerns, and that all aspects of health are inter-related, with all employees contributing to this goal. Evidence of this set of values was reported by administrators and clinicians, alike, for all of the sites:

One of the goals of a patient-centered medical home or the philosophy is that it's a primary place you can come to with all of your health care needs, whether they're 'physical' or oral health, or we also do a large volume here of behavioral health. So, to us, oral health is just part of the integrated care that we

provide. That seems to be one of the key foundations of patient-centered medical health. [Deputy Director]

...how we approach what makes kids happy or what would be important to do for kids...It is a genuine desire to just make kids happy. [Pediatrician]

I think that being a medical home makes perfect sense to incorporate the oral health care because we're looking at the person as a whole and taking care of all parts of them, and really...the mouth is part of your body so, yes, it makes perfect sense to have those [incorporated]. [Quality Improvement Coordinator]

If we see something wrong with the child, even though it's not something necessarily medical-related from our perspective, that's definitely something we should address. [Registered Nurse]

I mean, you can't separate the mouth from the child and the dentist from the medical provider. It all needs to be integrated. [Nurse Practitioner]

[In regards to integrating electronic medical records]...finding an avenue or a connection, if you will, from our new system to the medical side system so they can be incorporated because they go hand-in-hand, oral health and whole body. [Dental Hygienist]

It [oral health] definitely has a big place, I think, in the community health center. [Physician]

That's part of the overall health of a child, even though they are here for an earache, because that's [the mouth] part of the body, and we can't ignore it. [Pediatrician]

Respondents across the continuum of oral health integration extended this holistic vision health to the health of the community as a whole:

With better dental health, you are going to have a healthier community as a whole. [Nurse Practitioner]

So it's [oral health] very beneficial, and we need to make sure that we are on top of that [oral health] as an organization, and as well as a community, period. [Nurse Manager]

The bigger issue is it helps in our commitment to improve the health of our population. [Pediatrician]

The federally qualified health centers in this study were described by interviewees as having highly specified role descriptions and a culture influenced by traditional patterns of problem identification and solution (what we have always done). Staff felt uncomfortable when they lacked resources to serve the patient's overall health needs. From a clinic with minimal integration:

We also have a lot of behavioral health here on site, so our providers are very comfortable asking behavioral health screening questions, making behavioral health referrals, because it's easy for them to do that. In a practice that actually can't make the referrals, I think there's a reluctance to delve into it and ask the questions. You sort of have this problem on your hands that you can't do anything with. [Deputy Director]

Organizational structure

The practices around decision making often give insight into the norms, values, and basic assumptions of an organization, which are all critical in assessing the grounds for implementation. In terms of decision making, respondents reported two different norms. One norm was a top-down hierarchical structure for decision making, evident at both ends of the continuum, with the CEO or other upper management being the final decision maker.

Yeah, they talk to the doctors and there are times they may come and get our input, but the main decision is made by the CEO. [Dental Assistant]

So it's a long process because it involves quite a few decision makers, but ultimately, the final decision is at the CEO level. [Chief Compliance Officer]

Buy-in from these upper-level decision makers is perceived as crucial for implementing any sort of change. From two clinics with moderate integration:

Well I think Dr. _____ is on board, and he's our medical director for the whole facility. To be honest, if he's on board, everybody else would be on board. [Nurse Manager]

The administration has to buy-in to the importance of pediatric oral health and has to make it a priority among all of the multiple priorities that we have...Once administration has bought-in, then we start the process of education and building it into the system of care that we offer at our organization and finding ways to better integrate the care. [Senior Vice President of Outreach]

One particular lower-level administrative worker at a site with minimal integration reported that this structure tends to neglect the input of workers in lower-level administration:

They're not going to take something like that coming from an office assistant. So it would have to come from upper management; that's just the way you have to go. [Office Assistant]

And if a team leader in the department doesn't feel like he or she cares for it, it doesn't happen. But if upper management pushes for a change, and they don't take no for an answer, then they could. The changes could happened, but whenever someone other than the [upper level] administrative staff or the provider bring up an idea about making a positive change into something, then providers don't care for it and they get shut down. [Office Assistant]

Not all sites reported a top-down decision making model, however. Various sites, most with moderate integration, reported involvement of various levels of medical providers as well as administration, paying particular attention to those who would be actually implementing the change:

So depending on who it's going to affect the most, it usually involves the lead clinician such as myself and then the nurse manager, charge nurse. And we also have the lead MA. So, we try to make sure we discuss it among all those groups before adopting anything new at each level; everyone is prepared. [Pediatrician]

With the large majority of issues or topics that are brought to the senior management level, there has already been a level of due diligence done by Dr. _____ or someone else to make sure that the buy-in is already there, if you will, from the people who are going to be adopting it. Again, it just depends on the issue or the level of resources and so on needed to make certain things happen. [Chief Operations Officer]

So when integration is done, everyone understands what to do and what their roles are. [Dental Director]

We encourage new ideas to come from anywhere. We try to address them and follow through on the good ones and adopt them. [Family Physician]

One barrier to integration reported was the norm or value within the healthcare system that medical doctors took priority in the decision-making process, or they were seen as unapproachable because of their position within the clinic. One dentist at a clinic with minimal integration noted:

I noticed that with the medical providers, when we try to incorporate the fluoride varnish, I tried to get the administration to help me with them [doctors], but what I noticed is it's very hard for them [the administration] to tell doctors what to do...I feel that with the medical doctors, and I guess it's like that everywhere because in the profession of health they are the highest in rank in the healthcare field, that's my impression, and I think I have seen it in other places, too. They do a great job, but I think that sometimes [when] things come from administration, they don't want to impose it on the doctors when they feel that it's not important to them, but it's something that has to be done. They should be more open to incorporation with the oral health team to be in the pediatric department without so many barriers. [Dental Associate Director]

These thoughts were echoed at other sites, too, on both ends of the continuum:

I think telling the providers what should be done would be tough. Some providers are certainly of an age where they don't like change. [Office Assistant]

I think it would be very difficult. It doesn't sound to me that pediatricians are specifically big on teeth. That's my impression. [Pediatrician]

One pediatrician is the team leader for pediatrics. I would go to her and try to sell it to her. My guess is that it wouldn't be necessarily a hard sell, but I don't think this is an issue [team leader] has any great passion for, so I don't think [team leader] would be wanting to do a whole lot special for it, but I would just want to make certain that [team leader] wasn't in disagreement and that I would want to make

[team leader] feel like [team leader] is part of it so that I could count on [team leader], at least verbal support. [Pediatrician, COO]

I think there's a certain amount of pediatric acceptance of the fact that, 'most of our kids have some evidence of dental care,' so we don't really need to aggressively integrate medical and dental because they're already choosing or obtaining some dental care outside of the practice in private dental settings or these franchised dental settings. [CEO]

One dentist at a site with advanced integration reported an imbalance of representation between medical and dental on decision-making structures, like a Board:

I think the Board is the supreme power. And then, the management would be the CEO. I think he's the chief, he's next to the board and he's on the Board. I know there are some dentists on the Board but not dentists that work in the health center...dentists...that work for the ______ corporation do not belong to the Board...It just hasn't been allowed so far. I know there are physicians that work for _____ that are on the Board...There is structure. I'm just not a part of it, and I don't think the dental director is a part of the structure, as far as I know. [Dentist]

On the side of dentistry, while dentists were largely in favor of integration, there seemed to be a concern among medical clinicians that dentists felt that they might be replaced in some way. This was reported in clinics with minimal integration:

We have talked about starting fluoride varnishes, however we were speaking with the dentist that we work with and the feeling was rather than us doing that there, they felt that by us providing fluoride varnishes ourselves, it would detract them [patients] from actually establishing with the dentist, which I don't completely agree with. [Physician]

The part that happens in pediatrics is really more of a sort of screening and referral. That's providing oral health services, but certainly not taking over for the dentist or trying to supplant the dentist or anything like that. [Deputy Director]

Territoriality: Separate medical and dental silos

Among various staff at all sites, across the continuum, there was basic assumption that all staff were specialized and that to integrate would overstep someone's area of expertise. Each area had a defined role and limits to the scope of that role:

Yeah, I mean, I think that would be good for the providers to do during routine well-child checks, but I don't think on the nursing level that would be something we would be involved in. Not at our level of practice, but providers during well-child, yeah, I would think that'd be reasonable. [Registered Nurse]

Again, where we're getting the challenge is not only the lack of education [about oral health] maybe on the medical side of the house with the pediatric nurses and sometimes the provider not being

'comfortable,' if you will, just because it's not their area of expertise and they're not trained a lot of times to look for certain things. [Chief Operating Officer]

A dental hygienist would be much better to teach the parents about oral health than a pediatrician. [Pediatrician]

I don't think pediatricians are trained to look at teeth. I am definitely aware that I have deficiencies in oral health. I am sure a dentist is an expert. [Pediatrician]

Going beyond the defined role (with its basis in expertise) was thought of as having negative results for the patient: either confusion or failing to adequately serve the health of the patient:

And I said, 'No, I mean if you're a doctor, you should be making diagnoses. If you're not, you can sort of make assessments and then within your scope, make a plan for those assessments, but you shouldn't be diagnosing things outside of your scope of practice, because then that gets very complicated and confusing for the patient.' [Pediatrician]

It might confuse what we really are, which is medical. I think the patients would confuse us...as a dental office. [Medical Assistant]

Our exam is certainly not as thorough as the dental exam is going to be. And my biggest worry is the gum issues and the gum disease that we may not be picking up at the rate that the dentists usually are. [Pediatrician, CMO]

They [Pediatricians] could do a cursory look, but a cursory look does not always tell you what's going on. So I always say refer to the dental department because I think that's best. [Dental Director]

Obviously they [pediatricians] are not going to be able to do the justification that a dentist could because it is not their area of expertise. [CEO]

In fact, I was talking with Dr._____ and said I would really like to get some additional hands-on training for the dental exam. I mean, I can go in there and look around in the mouth but I may not know what exactly I'm looking at if I haven't gotten training, you know. I can go through the motions but I may miss what I'm looking for [Registered Nurse]

Implementation Climate

Climate differs from culture in that climate "can vary across teams or units and is typically less stable over time" as opposed to being stable and somewhat subconscious, like culture. There are six sub-constructs through which climate for implementation can be assessed: tension for change, compatibility, relative priority, organizational incentives and rewards, goals and feedback, and learning climate.

Tension for Change

Tension for change is understood as 'the degree to which stakeholders perceive the current situation as intolerable or needing change.'

Many respondents, across the continuum of oral health integration, expressed feelings that were over and above simply valuing the oral health integration into pediatrics. They described the absence of the ability to address oral health services as intolerable:

And there was just this human cry that our area was underserved for dentists. [Deputy Director]

I despair of the fact that, for some reason, the brain and the teeth have to be thought of as different from rest of the body. [Pediatrician, COO]

I've never seen such bad teeth in my life since I moved to New York and then moved here. It is extraordinary. It makes me nuts, can you tell? [Nurse Practitioner]

We're here to take care of their needs and leaving out dental is just not acceptable. There are just too many problems that can go wrong. [CEO]

Perhaps motivated by this intolerance of unmet need, some respondents in clinics with moderate or advanced integration reported a tireless commitment to promoting oral health:

I am drastically trying to get dental exams in where our pediatric site is. [Chief Dental Officer]

Because I'm going to keep pushing it. [Interviewer: Keep pushing whether they're interested or not?] Right. [Dental Assistant]

In summary, throughout the interviews, oral health was identified as a value by respondents at all levels of oral health integration, but some staff from moderate or advanced integration clinics expressed an even stronger desire to change the status quo. This high tension for change is favorable to efforts to integrate oral health into pediatric practice.

Compatibility

Compatibility refers to two different directions of fit: the fit of the intervention to an individual's own norms, values, and perceived risk and needs as well as the fit between the meaning attached to the intervention and the meaning communicated by upper management. If there is a positive cohesion in these directions, the intervention is more likely to be implemented. The extent of the fit is also affected by existing workflows and systems currently in place. Some respondents, mostly from clinics with no integration, expressed concerns as to how current systems would need to change or adapt to facilitate integration:

In the referral systems:

Dental insurance is separate from medical insurance,¹ and so the only reason you do referrals, for the most part, is because insurances require it to get the patient in. And for dental insurance, it's a totally different story, so we don't actually make the appointments for them. [Physician]

In the payment systems:

One issue...would be how we are going to incorporate that into a sliding scale...we would need to decide if we were going to change the sliding scale or keep it the same. [Nurse Manager]

In clinical protocols and EHR:

It needs to not be something that the provider or anyone is expected to remember off the top of their head or go to a file cabinet, find that sheet that has the protocol. It really needs to be worked into the system. And I think, in 2015, that means it needs to be part of the EHR. You need a reminder that pops up at the right time...I think it needs to be seamless and not require someone to remember something off the top of their heads. [Family Physician]

A lot of our families come in, and they have a number of other issues that are more pressing, at least from their perspective and sometimes from our perspective. So, it's just making sure that we have a kind of quick and easy way to work it into the assessment and discussions that we have with the family...We're kind of working on streamlining systems to make it easier and something that we can easily incorporate in a small amount of time. [Pediatrician]

All of these requiring additional training:

So you have to educate the front desk of the medical side...So it would definitely have to cross train maybe a lot of people...You're going to have people learning a lot more about medical and dental if you're doing them both at the same site. [Chief Dental Officer]

A number of respondents, mostly from clinics with moderate integration, expressed similar concerns about potential workflow effects of integrating oral health. Some commented that integration would result in an already busy environment becoming more hectic:

So seeing those 150 patients a day for physicals, follow-ups, and then also having an office for oral will be making it even busier. [Pediatric Receptionist]

I think right now it's having the right amount of staff...sometimes you're talking about less people doing more work. So that's the negative. [Chief Dental Officer]

Their panels are pretty much chock-full when they have appointments. I have one doctor that probably you can't get a physical with her for five months. [Nurse Manager]

¹ For the state in reference, children under the age of three are covered for both medical and dental care under Medicaid.

Integration would mean meetings and trainings, and respondents across the continuum expressed concerns as to how these additional responsibilities would affect their schedules:

You know, if you can just get a meeting, but everybody's so busy and seeing patients and trying to get those numbers. [Dental Assistant]

Yes, but not if we have to use meetings during the time when we are supposed to see patients or meetings outside of the regular working hours. [Pediatrician]

And what is the impact on that person's schedule in addition to his/her fulltime other responsibility? [Nurse Practitioner]

...and then unfortunately having to clear schedules, which tends to be the hardest thing: to attend any sort of meeting. [Nurse Practitioner]

Honestly, I'm seeing patients all day, so I'm not going to be organizing programs. [Physician]

Acknowledging these concerns, administrators across the continuum offered suggestions to overcome barriers, noting the need to not over-burden providers, while incorporating changes into the flow of everyday work:

You want to make it as easy for providers, operationally as easy as possible, to do the work. You don't have three hours for a well-child visit. You have fifteen minutes. So whatever you can do to make that an easy flow, whether that means having things built into your EHR, having your referral easy, having all that stuff to make it operationally easy for the provider to do that is going to help more often. [Deputy Director]

I don't think it's a real tough sell. They're interested. They see the importance of it. I think just try and make the systems as seamless and easy for them to participate in the things as possible. [Deputy Director]

One receptionist from a clinic with moderate integration expressed openness to working toward this goal:

Absolutely. I work up front with two other receptionists, and we're very open with changing and adding more things to our schedule. [Pediatric Receptionist]

The intervention must also be compatible with patient population characteristics; lack of sufficient resources to work with those characteristics could add to further interruptions to patient flow:

There's always that language barrier. We have the option of the language line that we use. Or we also Google and have it on the computer to try and interact. But yeah, it makes the appointment a little longer. And obviously it hurts the patient if you start running behind with patients. So I think there is a barrier there. [Chief Dental Officer]

Respondents also noted that unless there was adequate staffing, integration would further disrupt the alreadylarge patient panel, requiring more staff and longer clinic hours. Two respondents from a clinic with advanced integration noted these concerns:

It depends on whether we choose to first decrease the number of adult patients that we see because our adult population has great need as well. And we see both pediatric and adult, and we do not have a pediatric dentist here. [Dental Director]

It could potentially create an overload on the dental side, as we exist right now...We just don't have the staff to take on a sizable increase, as it exists right now. [Dentist]

Respondents from a clinic with advanced integration worried that a lack of staff might increase patient dissatisfaction and the number of patients, who leave without being seen because of extended wait times:

Yeah, we [could] maybe have one more dental hygienist. I know they have one, but maybe one more can speed it up, because our babies see the dental hygienist first. So if they have another one, that could speed up the wait time. So they will not have to leave. Some of them say, 'It was too long. There were too many people. It was too long. So we had to leave.' [Chief of Pediatrics]

Once they were sent down stairs, there was still a long wait and so parents got tired of waiting and they would leave, but it has gotten much better because now we have a dental hygienist and a dentist. It runs a little bit more smoothly. [Pediatrician]

A need to change clinical protocols was reported, too, by a COO at a clinic with no integration:

Yeah, I think that there would definitely be changes there. There would be additional protocols in place, and then there would be some adjustments to existing [ones]...anytime we add additional services, there's an adjustment to the protocol of handling the visit. [Chief Compliance Officer]

Relative Priority

Despite these barriers and possible interruptions to flow and systems, nearly all respondents across the continuum expressed high relative priority for integration. Relative priority is understood as an "individual's shared perception of the importance of implementation within in the organization." Both clinicians and administrators, alike, stressed the importance of implementing the intervention:

There's so much going on with the kids' needs in a community like ours that making dental rise to the level of awareness and importance that it really should have was a minor issue for us, because I think we all get it. But that doesn't mean it's automatically there. [CEO]

They want to do it, and I've never heard of anybody say, 'Well, do we really want to do it?' Yes, everybody agrees. [President, Chief Executive]

Oh, 100%. I think it [oral health activities in pediatrics] should be part and parcel of what we do every time. [Chief Medical Officer]

I was going to say we have pediatricians, family doctors, nurse practitioners, and PAs all doing well childcare. I would think all of them would be interested in working with a program. [Family Physician]

I'm a firm believer that pediatricians should be doing fluoride varnish and not waiting for kids to get around to getting to the dentist. So I think it is every bit as important as everything else that we do, as the immunizations that we're giving to the kids. [Pediatrician, COO]

Perhaps due to this high relative priority, respondents offered possible solutions to the issues brought up with compatibility. Some of these solutions involved changing staff or additional staffing in the clinic. One suggestion, offered by respondents across the continuum, was to expand the role of medical assistants:

We do have the people here. We have medical assistants here that could give out brochures. We have talked about doing varnish and having medical assistants do varnish. We have the staff available, and it would be wonderful if they were part of that process. [Nurse Practitioner]

Using medical assistants, nurses to help us as well with the education piece I think would be helpful. [Pediatrician]

Medical assistants could also hand out, if we had to do dental pamphlets, or those toothbrushes and toothpaste. I think that would all be a medical assistant role...Because our medical assistants are tied to each provider, so that way each provider can have somebody who's responsible for that for them. [Pediatrician]

Sometimes, paradoxically, the patient listens to the MA who comes from their own cultural background [more] than they do to me. [Pediatrician, COO]

While this was offered as a possible strategy, there were concerns from advanced and moderately integrated clinics about the demand this would place on medical assistants, who are already asked to perform many activities:

For the medical assistants or anybody else that might be trained to be able to administer the program and to be able to do this amidst all the other thousand responsibilities they have within the health center. It usually boils down to resources. [CMO]

Our MAs do a lot now. We need to get it a little more streamlined. And they're at the point like, 'I hope they're not going to ask me because they have one more question about anything.' [Nurse Manager]

And that would definitely take away from the physician time, although that adds to the medical assistant time, and then that's time that they can't be counseling another patient. And so it would all have to balance, and they would need to have training in that. But I think it would definitely be worth

exploring the different possible options and who could potentially do what, just to make sure it happens. [Pediatrician, COO]

One medical assistant from a clinic with minimal integration was open to the additional responsibilities:

Maybe, it's depending, again, if we're doing the education during the visit; I don't see it being something that's making us feel worse that we're already doing a little education, not just a huge one. We do a little minor one, simple little teachings. But I don't think it would back us up or make the flow any different. [Medical Assistant]

A family physician from a clinic with minimal integration suggested the demand would be eased with additional training:

But the flows, I don't think would work that well. If you have two patients at one time or four patients at one time, who all needed the attention of this assistant and then they would either wait or just say, 'Oh, forget it.' Whereas if you train the medical assistant, who is doing a lot of other things for that patient, somewhere during the course of the visit to do it, they get more realistic and more efficient. [Family Physician]

Another solution to implementing integration was addition of dental staff to the pediatrics department or as part of the pediatric team. This was suggested by respondents across the continuum:

[Interviewer: If you couldn't get a dental hygienist, do you think a medical assistant, a nurse might do some of these things?] It should really be a dental hygienist. The teeth are not as simple as they look, to brush your teeth. Even brushing your teeth is not as simple as most people think it is. [Pediatrician]

I think if I have the space, coming from the dental field, I would request to have a room with a dental chair where I could have, not necessarily a dentist, it could be a certified dental assistant or a hygienist to work in that clinic and assist the pediatricians and the pediatric nurses...because that's their profession...so they know the area well. [Dental Associate Director]

I would basically have a dental hygienist. For every well child visit, I would offer the parents to see a dental hygienist on the spot right after the visit, or while they're waiting. So that it's like a one stop shop. [Pediatrician]

I could also see just the opportunity for the dental hygienist to be able to come to the waiting room, for example, and do education with families as they are waiting, take that opportunity as well. [Pediatrician]

If we were interested or able to actually have dental services, not just part of the well child visit and booking and that, but actually providing dental services, we would probably need additional space and specialized staff, which we don't have any of that currently working here. [Nurse Practitioner]

Respondents from one clinic with moderate integration noted the success they have had in adding dental staff, with the use of additional funding:

We did recently receive funding for an expansion of services and we are in the process of hiring a dental case manager, which I think it's going to be a great opportunity for us. They are going to be able to see the whole spectrum, so we've got WIC services, we got school-based services, we've got oral health services, and they should be able to see the whole picture. [Senior VP of Outreach]

However, adding dental staff would mean an agreed-upon scope of work, noted one nurse from a clinic with advanced integration:

I don't think that dental assistants should be scheduling medical appointments at all, but I do feel that they can, just as we refer to them, they can certainly send us messages where we can contact the patient and follow up. But I don't feel that they are necessarily medically trained or would understand how to work our schedule. [Registered Nurse]

Limitations on what dental assistants could do in a medical setting according to the Board of Dentistry were also a concern. Some respondents disagreed that having a dental assistant was a proper solution:

At a clinic with no integration:

I would say a dental assistant could do that, but I don't know if having a dental assistant in the primary care is something that's needed. [Nurse Manager]

One dental assistant at a clinic with advanced integration was hesitant about how integration would affect the dental side:

[Interviewer: And providing the brushes and toothpaste, would that be a good thing to put on the other side, on the pediatrics side as well as your side?] Yes, but then that's taking from us. [Dental Assistant]

Because integration would take more time and effort on the part of the staff, and possibly disrupt patient flows, respondents across the continuum offered solutions to maximize the time the patient spends in the clinic, using wait time as valuable opportunities for patient education or the application of fluoride varnish.

Have something where...one person can sit down and talk to explain everything, how important it is. Give them a little lecture in the meantime. That would be great. [Dental Assistant]

I just feel like having more like an auxiliary person, the medical assistant that they use for example, doing that with the children in the beginning before the doctor comes and incorporate the oral health topic in the list of the topics that they usually discuss with the parents. [Dental Associate Director]

I think the next step in a patient-centered medical home is to have some other staff who assist the providers with patient education. So I could go in and finish my well-child check, and then my nurse or my nurse educator or maybe the dental assistant or hygienist from the dental side could come over and talk about other things with the parent and the patient. [Family Physician]

In summary, respondents across the continuum reported a high relative priority for integration of oral health into pediatrics. This relative priority formed the basis for many solutions that were offered by staff across the continuum to address barriers associated with compatibility. One solution was expanding the activities of medical assistants; however, there were concerns from advanced or moderately integrated clinics about adding additional demands to their role, already having many duties in and around the clinic. Clinics with no integration seemed open to working around these issues. Another solution suggested across the continuum was to add dental staff to the pediatric department and team, with an agreed-upon scope of work. This solution can be made possible by additional funding, as shown in one clinic, though there was concern about how additional funding to pediatrics would affect the dental unit's cash flow. Finally, respondents across the continuum offered the idea of maximizing wait time in the clinic, with opportunities for patient education and fluoride application before and after the visit, as well as in the waiting room.

Organizational Incentives and Rewards

Extrinsic incentives may include goal-sharing awards, performance reviews, promotions, and raises in salary, as well as less-tangible incentives such as increased stature or respect.

Respondents across the continuum did not report any internal incentives or rewards for oral health efforts, such as promotions, raises, or awards within the organization. While there seem to be no internal incentives for individuals, there may be incentives for the organization as a whole.

One incentive could be the recruitment of patients to the clinic. The interviewer asked respondents: "Do you think the addition of oral health activities as part of the well-child visit would attract patients to the clinic?" What followed was a mix of answers, with some respondents feeling confident that this addition would bring in more patients, others feeling it would not, and still others were unsure.

Among those who agreed, respondents from clinics with minimal or moderate integration spoke to the scope of services offered:

I don't think just the addition of oral health education or a free toothbrush or a brochure would help but if we had dental services, like actual dental services, and that may even be as little as varnish, fluoride varnish, that could potentially attract patients. [Nurse Practitioner]

Depends. If it were a health activity, it would, but having dentists and dental hygienists on staff definitely would. [Pediatrician]

Cleanings. I think that would definitely bring more patients into the health center. But if it's only an assessment or a referral to another facility where they could see a dentist, I'm not sure that that would be a driver for new patients. [Chief Compliance Officer]

Two respondents from a clinic with advanced integration saw integration as an added bonus and congruent with the idea of a medical home:

When the dental residents are with us, I know the families, again depends on the family, but they are very appreciative like, 'Oh great, a dentist is seeing my kid. That's fantastic.' I think they appreciate that. It seems like a more comprehensive visit than they originally thought it would be. Not just a doctor, but the dentist as well. [Pediatrician]

You know what? It doesn't attract them, but it will impress them...because they recognize the comprehensiveness and they'll say, 'Wow, we didn't realize [that if] I go to a pediatrician I get dental health issues or resources'...it makes the whole concept of a pediatric home kind of sink in because we're taking care of the kids on all levels. [CEO]

Other respondents from clinics with moderate or minimal integration echoed these ideas in saying that a 'one-stop shop' would be attractive to families:

I think it depends what it was. If you had cleanings and all that, I think that would be an attractive feature, thinking of it more as a one-stop shop that you could just take your kid to the same place to have everything done. That would be easy. [Quality Improvement Coordinator]

Oh, yes. Having everything all in one place, they love that. [Pediatric Receptionist]

In the moderately integrated clinics, some respondents felt dental services would not attract patients, while others saw integration as superfluous because of the co-location of a dental clinic:

Not necessarily, because other than what we have now, because we do have a dental clinic here...So it's not specific to pediatric having it in the pediatric department versus having it in the same building. [Nurse Manager]

My honest answer is no. Not really over and above. I mean the fact that we have a dental clinic, I think the fact that we have primary care and dental working together under the roof, for the same organization, drives more patients to dental care. And then there are patients who initially come in to see a dentist and then they, 'Oh, yeah. I also need a primary care medical provider.' And then they get hooked in the medical care via...by seeing a dentist first. I think that works. But I don't think that sort of knowing that when I go to see my medical providers, that they are going to give me a toothbrush or talk about oral health needs is actually getting more people to come in. [Family Physician]

Respondents at clinics with moderate or advanced integration saw an additional effect of improving the value of oral health education:

I don't know that it would necessarily attract more patients. But it definitely would help improve the way our families see the need for dental care. [Nurse Manager]

I don't know how effective a motivator that would be in and of itself, but it certainly wouldn't hurt. And even in broadcasting the fact that you had that ability, helps to broadcast the message that parents need to be concerned about that. So it would be another way to get the message out there. That's for sure. [Pediatrician] Another organizational incentive that respondents across the continuum reported was the opportunity to increase clinic revenue for billable procedures, such as the application of fluoride.

They [patients] wouldn't be billed for the fluoride varnish, and it will create more of a financial reward to the medical pediatric department. [Dental Associate Director]

Well you can get paid reasonably well. It's been a while since I looked up what we get paid in [State] for dental varnish. These may be several years old. I do remember last time I looked into it, I think it costs us about 50 or 75 cents, at least for the supplies to do a dental varnish. And we were able to collect something like 25 dollars, not a bad return on investments. [Pediatrician, COO]

However, some respondents did not see the potential for increased revenue, based on how Medicaid reimbursement was structured in their state:

There is no additional revenue unless they go into the dental chair. So most of these kids are covered by Medicaid and then the state of [State] at our health center. The provider sees the patient for the medical visit...with just procedures or just a well-child care. It doesn't matter. We get the same amount of money from Medicaid on every child visit. [President Chief Executive]

Despite opportunities for reimbursement, one CMO at a moderately integrated clinic pointed out that reimbursement does not necessarily mean that oral health procedures are actually performed and billed for:

Our fluoride varnish rates are still not extremely high. They're pretty good but they're not. The numbers that we thought were potential patients that could receive the fluoride varnish, we are not close to even 50% of where we need to be. It is a matter of putting the appropriate resources together to be able to get this done. [CMO]

There is always talk of supplementing the reimbursement with an additional fee if a certain oral health guidance or guidelines are met. But I've heard about it a number of times, and I've almost forgotten about it because it's never happened. [CMO]

As one family physician at a clinic with minimal integration pointed out, it still comes down to personal motivation:

If providers have enough time and they are made aware of that there are patients who need whether it's a dental visit or a varnish or whatever, that they will do the right thing because they have interest or motivation to do a good job...attaching some money to it is ultimately not the most effective way. [Family Physician]

In summary, there seem to be no internal organizational incentives across the continuum for performing oral health activities at the sites in this study. However, there may be incentives for the organization as a whole. Benefits could include recruitment of patients to the center. Opinions on this were divided across the continuum, with some staff agreeing this is possible, others disagreeing, and others not sure. Respondents

noted that ability to attract new patients may depend on the scope of services offered and were concerned that integration of oral health might be superfluous if there was already a co-located dental clinic. However, some saw integration of oral health into pediatrics as an opportunity to uphold the mission of a medical home as well as to increase patients' family's value of oral health and provide educational opportunities. Another incentive mentioned for the clinic was the opportunity for increased revenue. Barriers to obtaining this revenue might include specific state regulations for Medicaid reimbursement and the increased burden on staff to perform the procedures and bill for them.

Goals & Feedback

The degree to which goals are clearly communicated, acted upon, and fed back to staff as well as the alignment of that feedback with goals all affect implementation.

As mentioned previously in Culture, different clinics reported different decision-making structures, either hierarchical or involving many stakeholders and adopters. One Nurse Manager summed up a process with multiple stakeholders:

I would say that the administrative CEO would have to be someone that would definitely agree to adopt the new activity, but we also have a QI Committee which consists of someone from all the departments here at [the clinic], and it could be discussed in a QI Committee. And then any change here also has to go through our Board. We have a Board that consists of so many patients. [Nurse Manager]

Another Nurse Manager summed up a hierarchical approach:

Doctor [CMO] would be the pivotal person, I believe, and then of course, senior management, so our CEO and our COO, and our finance director would be very involved in that...So it just basically would be the senior management team that would be involved in the decision-making process. [Nurse Manager]

Despite these contrasting decision-making structures, there seemed to be no methods in place for essential data collection, evaluation, and feedback for oral health activities. These gaps were identified in multiple interviews across the continuum:

We need some type of quality metrics in place so that there's a baseline measure of this is where our patients are today. And then a year from now, we're doing quality reporting on and proving that there is improvement as a result of the dental program. [Chief Compliance Officer]

Now, we don't have any data, as far as I know of, to verify whether or not we're being effective in our appointments...I think, from time to time, we have actually, done some data studies. Not recently. [Dentist]

Respondents across the continuum offered ideas as to how to fill in this gap:

And if they aren't seeing dentists, it would be nothing for us to run a report and call those patients and encourage them to do that. I think all of those are good things to do. [Physician]

Once a month, we have a quality improvement meeting. It would be through quality improvement meetings. [Pediatrician]

Now once the clinical guidelines are adopted, we try to monitor that through a peer review process to see how good the adoption is within all providers. I think that portion needs a little bit strengthening on our part, but that is the intent of the peer review committee. [CMO]

I think that the most important thing is just to give people feedback in a constructive non-blaming way...if we could just, you know, even a couple of times a year, tell a primary care provider, 'This is the percentage of your kids, whether it's a record of them having had a dental exam. And this is the percentage of your kids that got fluoride varnish, even once during the year.' And just give them that information and then give them whatever national numbers there might be. And maybe the percentage for the health center as a whole so that they can sort of see how they stack up. I think that's probably the most important intervention we could make. [Family Physician]

Learning Climate

A learning climate is defined as an environment in which: leaders express their own fallibility and need for team members' assistance and input; team members feel that they are essential, valued, and knowledgeable partners in the change process; individuals feel psychologically safe to try new methods; and there is sufficient time and space for reflective thinking and evaluation.

In the more integrated clinics, there are concerted efforts to collaborate between dental and pediatric units, with regular staff in-services, presentations, or meetings, where clinicians from either side educate the staff on a topic of choice. These activities provide evidence that 'team members feel that they are essential, valued, and knowledgeable partners in the change process,' as reflected in comments by colleagues:

But I find it very helpful to have the dental residents here and they point out, 'That looks like the beginning of caries. That looks like this. That looks like that.' [Pediatrician]

We're actually formally educating the pediatric staff about dental issues in general and maybe our dental capacity to make sure that my own staff understands, 'Oh, we can do this upstairs, that's great, I didn't know that.' Similarly, the pediatricians are going to my pediatric dental residents a couple times a year...So we are integrating medical and dental and getting the awareness of one another to take on, 'We're all one team, and let's train one another.' [CEO]

And bottom line is I can see things in a kid's mouth and I, oh, you know, thank God I have a dentist in my agency that I can pick up the phone and say, 'Dr. _____, what do I do with that?' [Nurse Practitioner]

The need for this collaboration seems to have arisen, in part, from the lack of oral health training in medical programs. Respondents across the continuum spoke of this shortfall and their lack of oral health knowledge:

I would think the clinic would need training on oral issues. We're only trained for medical. It's not really anything to do with oral or cleaning or stuff like that, maybe a quick education of when to start cleaning and how to start training. [Medical Assistant]

I clearly need to get the referrals system straightened out. I would love some brochures with pictures, and I really feel like I probably need some additional training on doing a better oral health system like, you know, nurse practitioners are deficient in dental training and dermatology. I will tell you that upfront. We didn't get a very good training on either of those. [Nurse Practitioner]

A physician should come out, primary care physician, should come out of residency knowing exactly how easy it is and be able to apply varnish. Now then, I think ultimately it doesn't really need to be a physician but that should be a residency training requirement is to actually apply varnish and to have that as a competency. [Family Physician]

Medical clinicians, nurse practitioners, medical assistants, and nursing staff across the continuum voiced opinions on what topics could be included in collaborative training between dental and medical staff:

What are the health consequences for a pediatric patient general health in regards to oral health? I would love it, would help even on actual assessment. What am I looking at? What am I looking for would be helpful. You know the growth sort of stuff. You see a mouth and there's obvious caries but what else should we be looking for? [Nurse Practitioner]

I think there should be training for all levels. I think everybody should know what's involved. And I think it would be helpful for providers to have some basic dental problems training, whether it's caries or mouth lesions, or whatever, because these questions come up [like] 'When can I get braces?' [Pediatrician]

We definitely need all culturally sensitive training just across the board, anything customer service, how to deal with patients. A lot of people, kids, are frightened and then the parents don't know what to expect so they're frightened for the kids, so just a lot of education and training on that part. [Nurse Manager]

Several respondents from more integrated clinics stressed not only that this training should happen but also that it should be ongoing and include all levels of staff at the clinic:

I think, you know, how our dental had an in-service for us to show children's teeth and dental issues that we can be looking for, I think doing that more periodically would be more beneficial. [Registered Nurse]

It should be periodic staff training. We have some that we do, but I don't think that it's adequate. We need to have more staff training. Staff at all levels, including medical assistants, nurses, providers and all the people. [Chief Medical Officer]

I think...time to make sure that everybody can be trained and not affecting the way the clinic runs. And then, follow up is very important, too, just because, you know, what's the use of training people if you

don't follow it up?...Then often times, the training goes by the wayside or there are new things that we can learn. [Pediatrician]

Another aspect of a positive learning climate is feeling safe to try new methods. While some staff welcomed additional training, others were hesitant, raising concerns if they would feel comfortable engaging in oral health activities:

The biggest one would be making sure that's comfortable. And it may not even be so much the doctors, but then medical assistants and the nurses. There would just definitely, obviously be a really large staff educational component to this. [Nurse Manager]

The main thing is having them know how to do certain procedures and things like that in regards to the dental care if they are comfortable doing it. Because some, I don't know if they would be comfortable in doing that and if not, hire more staff, but again financially is that possible, I don't know. [Pediatrician]

Readiness for Implementation: Leadership engagement, resources, and access to information and knowledge.

Readiness for implementation is defined as tangible and immediate indicators of organizational commitment to its decision to implement an intervention, consisting of three sub-constructs: Readiness for implementation differs from the implementation climate because it includes "specific, tangible, and immediate indicators of organizational commitment to its decision to implement an intervention."

Leadership Engagement

Administrators at each site across the continuum expressed a strong value for oral health integration into pediatrics, echoed by comments from staff at all levels of the clinic, but some staff stood out in terms of their active commitment to oral health. These "oral health champions" were largely known and recognized among peers as someone who values oral health and has already led initiatives for its inclusion or is motivated to implement future initiatives. While some respondents could not identify any oral health champions in their clinic, most respondents, particularly at more integrated clinics, could identify a champion; some respondents interviewed were the oral health champion on their staff. One Chief Operating Officer said of their oral health champion:

Dr. ______ here has done a lot of work. I know because of how tired [Dr.] usually is and how busy [Dr.] is with trying to make more and more people aware, including myself, of various oral health initiatives and so on. [Dr.] is very proactive in that. [Chief Operating Officer]

When asked "What would you think of the assignment of a team leader for oral health activities on the pediatric side?" respondents across the continuum largely favored this idea and stressed the value of having a point person to facilitate implementation:

If you could find someone who is interested in it and would want take it on, it would be great. It always helps to have a champion to educate other staff. [Pediatrician]

Any transformation that happens within our practice, there is naturally one person that they become the leader. They are the champion for that cause, and it's made our initiatives much more successful to have a go-to person. [Chief Compliance Officer]

That way, someone can make sure things are stocked and helping to line up the in-services or the trainings. I think that'd be valuable. [Pediatrician]

It would be great because a team leader is always worth it, because of the simple fact when someone doesn't understand or know, we could always go to the team leader to understand how to manage it. [Medical Assistant]

Respondents, particularly at clinics with advanced integration, agreed that without designating this crucial role of team leader, implementation was not likely to occur:

Nothing will ever happen without a leader. [Pediatrician]

Having a team leader actually helps because then it's always brought up and not left to just one person. Not left rather to the entire system and somebody thinks that someone has done it and someone hasn't. [Dental Director]

I think so because dental, it doesn't just happen. It has to have some direction. It has to have some focus and some feedback. So even in a practice like ours which is so totally resourced for pediatric dentistry, still at [the] medical end, somebody's got to own it. [CEO]

Two respondents from clinics without integration felt differently about identifying a champion, feeling that all staff are champions for the cause.

I'd actually hesitate to name one person. I think all of our medical providers who care for kids consider it really an important part of health. [Deputy Director]

I think we all are. I think we, providers, understand the importance of oral health and maintaining a good oral health. We all check our children equally and make sure that the oral health is included in our visits. [Nurse Practitioner]

Administrative staff also demonstrated long-term thinking and patience with implementation. From a clinic with no co-location, one Chief Medical Officer commented:

Obviously we don't have a dental practice in place. And if we did, we want to make sure that that practice is very well integrated into primary care and it offers an additional level of care to patients and families, as well. So we are looking at maybe two, three years out when they are able to achieve that. [CMO]

At the present time, the wait times would be a little bit longer, but over the course of another year, year and a half, we would be able to absorb anybody that comes in. [CMO]

From a clinic with co-location:

I'm trying to work on collaborating with the dental department now and seeing if nurses can be sort of re-trained. I have some new staff here and maybe incorporating that in the nurse-type visit that doesn't involve the provider visit. So that's something that may be in the future here as far as the medical piece, but I can't be clear. It's not running yet. There's a lot of things to work out in that direction. [Nurse Manager]

...So I think those are the kinds of things we should be doing, and I think we are doing them, but I don't know to what extent they're being done 100% as part of the routine. I think if we stay on this it could become routine, and the issue is to keep working it until it is routine. [CEO]

Interviewees designated themselves as oral health champions at all personnel levels within the clinics. Colleagues, particularly at more integrated clinics, were aware of the commitment of these peers and recognized their efforts to integrate oral health into pediatrics. Respondents from clinics with advanced integration, in particular, went on to note that having a team leader as a go-to person for questions was crucial to implementation, even suggesting that without such a leader, implementation would not happen. Clinics with and without co-location, had administrative staff who stressed the need for long-term vision and patience in implementing changes in order to reach that vision.

Available Resources

The level of resources among clinics for implementation was reported as mixed. In terms of funding, some clinics had experience with grants for oral health, though these clinics were the exception. For the most part, across the continuum, respondents were unaware of how to procure funding for oral health activities. Some clinics had grant writers on staff, while other respondents expressed a need to learn how to write grants for this purpose. Respondents who were aware of where to seek funding mentioned organizations such as HRSA, the DentaQuest Foundation, state funding, and funding for health disparity projects.

Administrators across the continuum pointed out that because the clinics are usually in economically depressed areas, municipal funds are difficult to come by:

Yeah, we typically go with the government-funded programming opportunities. We don't typically go to municipal governments for that kind of service. We don't have enough resources. [CEO]

It's a fairly poor city, and they don't do any direct funding of health care. Unless there was some money from [the] outside targeted at cities, I wouldn't see it coming from the city. We'd look at a private foundation. [Deputy Director]

Another respondent noted that state Medicaid funding was an asset to implementation:

So I think for us, it's not a resources issue. If we do it right, if we run the business right, we'll actually do fine. It's not a resource issue because the state has made the resources available through Medicaid. [CEO]

Two respondents from clinics with advanced integration noted that because of the demand for resources at the clinic, there are competing priorities for any funding coming in:

That's always the problem: where do we get the money from, especially [given] the fact that this is a community center, community clinic. If there's ways to raise the money then, yes, that would help, but that is a negative in regard to funding because there's a lot of different things that we would like to do but we don't have the money. So it's like they have to prioritize where the funds would go, allocate the funds in that regard. [Pediatrician]

There was some reluctance to seeking funding, particularly if the clinic was co-located. One family physician at a clinic with no integration put it this way:

Given that we have a dental clinic and given that we get paid for applying fluoride, I don't think it would be high on our list if we'll have to like take out a grant, specifically for oral health...There are dozens of things that we like to be doing more of or doing a better job at. And compared to most health centers, which don't have a dental clinic, I think we feel relatively fortunate in terms of our resources. [Family Physician]

Three upper-level administrators across the continuum stressed the importance of sustainability, particularly when thinking about funding:

If you don't think about the finances, then it will come and go...So make certain you're going to have a way to sustain it. You have to evaluate it. You plan for it. It's great if you've got some resources upfront and startup funds for it, but you got to be able to figure out how you're going to sustain it on the long haul. [Pediatrician, COO]

In a sense, there is no consistent source. A bunch of money becomes available for a year or something through some sort of an initiative. It's sort of having your ear to the ground and being able to strike when the money's available. Because it may not be there, at least from that same source, six months or a year from then. [Deputy Director]

I think it would just have to be something that [is] more of a long-term kind of thing, not just we're going to fundraise one time for this activity. [Nurse Manager]

One resource that was particularly concerning was the amount of time allotted in the exam room. Providers across the continuum repeatedly expressed their dilemma of trying to address all patient needs in time slots as short as 10 minutes, with a rare maximum of 30 minutes for a visit. Providers reported struggling to address pressing needs, while also including patient education and anticipatory guidance:

Again, I think it always comes back to being the time thing. But in a perfect world, I think every...wellchild check should include some dental and oral health education. [Family Physician]

There are a million and one things that you need to do in the context of a well-child visit, and you have a very finite period of time. Trying to do what feels like everything in that defined time period can sometimes be difficult. [Nurse Practitioner]

You've got a family. You identify that they're divorced, and the kids spend time in different places, and there's smokers in the house, and they don't eat right. They don't have a flushed toilet, and they're playing hooky from school. After a while, how much can you fit into a 20-minute visit? [Family Physician, CMO]

I'm not sure how much more we can squeeze in or...how much direct dental stuff our pediatricians would do. [Nurse Manager]

You can't go through the 7,000 other things that they're here for, and then, in addition, spend this extra time on dental. [Pediatrician]

Administrative and dental colleagues of medical providers recognized this strain and echoed their concern for not wanting to overwhelm the time in the exam room:

You hear from providers that it's just one more thing, just one more thing to do during a 30 minute or 45 minute appointment, whatever time frame they have for a well-child check. Either we give them more time, but then of course that affects revenue; we [have to] find a way to pay for it. [Senior VP Outreach]

Having to fit that in with their [pediatricians'] already pretty tight schedule would be a negative for them...I'm sure they would not be reluctant to want participate. Just not overly burden them...Because...they have a kind of a time limit to keep their processes moving also. You know, their patient loads. [Dentist]

From a site with no integration:

That's the point of view from the pediatricians because they do vaccinations and things like that, so adding something else in their mouth, they consider to be too much. I think that their reaction in the beginning was not so positive because they feel like they have an overload of activities. [Dental Associate Director]

Space was a resource that also came up when considering integration. Respondents noted that the space in the clinic would need to be optimized, so that integration could go smoothly:

So, I think, without a doubt, the physical space - the way it's organized is very impactful on how efficient you're going to be. And I think, that's one of the things that's contributing to us not being as effective as we could be right now. [Dentist]

At that time when they started the program I know the public health person was indicating that we could actually have a hygienist in the pediatric department doing that, and it was going to benefit the medical department. It didn't really work out; I think the space is an issue. Because I actually thought of also putting a dental chair there and having one of us go to the pediatric department a few days to see the children there, but they don't have the space. [Dental Associate Director]

We only have about enough fit space for providers, and so the space is small. That being said, if we had a bigger space, it might work out. [Medical Assistant]

In terms of training, as mentioned previously in Learning Climate, medical providers noted the overall lack of oral health educational resources in their medical training. This deficit was met, in part, by collaborative dentalmedical staff trainings on various topics, with medical providers having many ideas for additional topics to cover. Many respondents across the continuum noted fluoride training experience, particularly among the Medical Assistants, suggesting that this sort of training was available; at clinics that did not offer fluoride, training was reported as a next step in providing varnish. Nearly unanimously, when asked if they had ever participated in oral health-related training, respondents reported they had not and were unaware if their peers had participated in that sort of training, either.

Access to Information and Knowledge

Ease of access to digestible information and knowledge about the intervention and how to incorporate it into the work tasks. Information and knowledge including all sources such as experts, other staff, training, documentation, and computerized information systems is an important component of integration.

All respondents across the continuum were unaware of informational resources about how to integrate oral health into pediatrics. One Pediatrician and COO at a clinic with advanced integration reflected on a fellowship and committee positions held, and how it influenced personal interest in oral health:

Well, I initially heard about them probably 25 years ago [the AAP guidelines]. I was a fellow of the American Academy of Pediatrics, and I was a member of and ultimately the chair of the committee on community health services of the American Academy of Pediatrics. We had a liaison member from the American Association of Pediatric Dentistry, who was on that committee, and he very clearly opened my eyes that were not adequately enough opened prior to that time on the importance of dental issues. [Pediatrician, COO]

One physician from a clinic with minimal integration noted that lack of knowledge about guidelines had detrimental effects on access to services.

I find that sometimes the whole recommendation of starting dental visits at one year old, we see a lot of dentists that don't do that. So when I tell a patient, 'Hey, you need to go to see the dentist at age one,' but then the patient calls the dentist and they say, 'We don't see patients until age three,' because they aren't necessarily current on the most recent recommendations. So I think by definitely encouraging or educating the providers with what's recommended regardless of what the local dentists in their area do is probably the best thing to do. [Physician]

Outer Context

The 'outer context,' is defined in CFIR by four key constructs: participant needs and resources, cosmopolitanism, peer pressure, and external policy and incentives. Any changes in the outer context of an organization can influence implementation.

Participant Needs and Resources

As described in the *Patient Characteristics* domain, administrators and clinicians alike identified the various needs, barriers, and facilitators regarding oral health among their pediatric patients. The respondents reported tailoring their services to these patients. The more highly integrated clinics provided many examples of how they address the needs of their patients, such as using a system to ensure same-day well and dental visits for their patients, frequent phone call reminders to reduce their no-show appointment rate, and providing education and anticipatory guidance regarding oral health in the well visit. For example, a highly integrated clinic acknowledged the barrier associated with accessing orthodontic services and incorporated this service into their co-located dental clinic:

But we created that [orthodontic services] because we knew that low-income folks almost never get orthodontic services, and we had the opportunity to build a new facility, and we added orthodontics to it, and it's been very busy and very successful in about a year and a half of operation so we're pretty proud of the orthodontic clinic. [Chief Executive Officer]

A co-located moderately integrated clinic reported offering their patients of low socioeconomic status a 'sliding fee program' to discount dental services, while a moderately integrated clinic, not co-located, offers their patients fluoride varnish and a list of local dentists for referral during the well visit. A clinic with minimal integration discussed that during a well visit, patients are asked to self-refer to their co-located dental clinic for their oral health needs. A clinic, not co-located or integrated, noted that while they do not provide dental services at the clinic, their clinicians do ask questions about oral during the well visit.

In summary, while interviewees of all six federally qualified health centers are aware and acknowledge the oral health needs, barriers, and facilitators of their patients (see *Patient Characteristics*) and have tailored their services respectively, comments from these interviewees, however, suggest that discrepancies between identified needs and the actual oral health services offered during a well visit exist based on the level of integration of the clinic.

Cosmopolitanism: the extent to which an organization is networked with other external organizations.

Sites across the continuum reported some degree of networking with outside entities across a spectrum of relationship types, for training, for patient care, and for community oral health education and prevention activities.

Training collaborations

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

The extent of training collaborations was reported as ranging from having an outside dentist come in for biannual informational presentations, in a moderately integrated clinic, to a full partnership with a school of dentistry, in a clinic with advanced integration, which included a rotation for dental residents in the pediatric medical clinic.

Service collaborations

Collaborations for service provision, in clinics with minimal integration, consisted of referral for adults with chronic disease but not for children:

That's mostly for adults, but the pediatric-side, it would be a rare circumstance where we would try to talk to the dentist in the other area. [Medical Assistant Manager]

One of the moderately integrated clinics, not co-located with a dental clinic, commented on their reliance on outside dental practices:

We actually depend on a whole host of community dentists or dental practices within the city to be able to go to and take these patients on. [Chief Medical Officer]

One of the clinics with advanced integration mentioned that patients needing specialty care that could not be provided in-house, typically root canals or orthodontics, would be referred to outside dental practices.

In the second clinic with advanced integration, a new pediatric dental unit was located a floor above the pediatric clinic waiting area and was staffed by dental residents and pediatric dental fellows:

We, in the dental department, do, frankly, all services as far as kids are concerned. If a child, depending on the age, needs a root canal, we usually refer them out. But as far as preventative, fillings, extractions, all of those, we do there. [Office Manager]

The other thing I think is really helpful is that we have a dental clinic in our health center and there are pediatric dental residents who rotate through pediatrics. And I've found that that is very helpful when the dental residents are here and they can be face-to-face with the patients. They come into all of our visits with us, and when the patients and the moms or dads can see them and say, "Oh yeah, I work upstairs. If you don't have a dentist, you can come see me upstairs." [Pediatrician]

Community oral health education and prevention activities

Moderately integrated and clinics with advanced integration described reaching out to their communities to participate in programs outside of the clinic setting. For example, both moderately clinics studied identified partnering with their local Women, Infants, and Children (WIC) programs.

We'll just do a day screenings from time to time or different health care events and so on working with our local WIC programs. [Chief Operating Officer]

A clinic with advanced integration also reported collaborating with local schools and Head Start programs.

Now we also have relationships with outside entities so we are the dental home to Head Start programs in the area, and we work with some of the local schools. [Chief Executive Officer]

In summary, while all the clinics noted some level of networking with outside organizations, it appears that the more integrated health clinics were more likely to be working with external entities and that these partnerships were more deeply rooted when compared to less integrated clinics.

Peer Pressure: the mimetic or competitive pressure to implement an intervention.

Peer pressure was not explicitly asked in interviews, but the topic did come up indirectly in responses from the respondents. A dentist at a clinic with advanced integration noted that if the standard of care included oral health in well-child visits, the dental clinic would need more resources to remain competitive in the oral health field:

Because of staffing, resources, space...we just don't have the staff to take on a sizable increase, as it exists right now. And then, especially, I think we have an ineffective system that we use for contacting and sharing, and just doing it. Our computerized system for the front desk just moves too slowly. We definitely need more. We need more resources as it is to move forward with electronic records. But also, the administrative side of it, the administration, the management of the dental records...getting insurances approved, of getting patients registered in a timely manner. That just needs to be better if we plan to try to remain competitive in the oral health field at the health center. [Dentist]

On the other hand, it appeared that the more highly integrated clinics were not aware of or concerned with peer pressure. When discussing programs that were in the early stages of integration, a clinic with advanced integration acknowledged having no issue with competition:

And you know, nobody's against it. Nobody's going to stand in our way. It's not a competitive issue. [Chief Executive Officer]

One dentist appeared unaware of what other clinics were doing with regards to electronic health record integration and showed interest in whether those clinics had the capability to do so:

...But on the notes and being able to integrate, I don't know. I tend to think that the pediatrics would not be a part of the Dentrix system, but I am unsure. Is this what many clinics are doing? They do have that integration of capability? [Dentist]

External Policies and Incentives

External policies and incentives are external strategies to spread interventions, including policy and regulations (governmental or professional), mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting.

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

Administrators and clinicians alike remarked on various external strategies and incentives they have heard of and/or used, such as the expansion of dental coverage for patients, sources of funding for oral health activities, recommendations and guidelines from professionals organizations (though not with much specificity), as well as fluoride programs. However, just because these strategies exist does not mean that they are adequate for integration or taken advantage of by health centers.

Affordable Care Act: Expanding pediatric dental coverage and opening sources of funding for expansion of services

Under the ACA, dental coverage for children was listed as one of the ten essential health benefits to be offered to consumers. States expanding their Medicaid programs and individual and small group health plans offered through the Health Insurance Marketplace must provide dental coverage for children under the age of eighteen. While dental coverage must be made available to all children under the ACA, if sold separately, it is not mandated that consumers purchase it.⁴² The ACA does not require Medicaid to cover dental services for adults.

The ACA also supports the patient-centered medical home model for quality and continuity of health care.⁴³ The federally qualified health centers analyzed in this study were either designated as a patient-centered medical home or in the process of receiving the designation. A Nurse Manager at one of the intermediate clinics had this to say about their patient-centered medical home title:

I know we get a lot of our funding from HRSA [Health Resources and Services Administration] because of our patient-centric medical home. [Nurse Manager]

As a result of the ACA, one of the other moderately integrated clinics received federal funding from the Health Resources and Services Administration to expand dental care in the clinic.

We've just recently been successful with the Health Resources and Services Administration to expand our dental care by adding another hygienist to our team. We have added a hygienist and a dental case manager, someone who follows the patients, either finding out why they missed an appointment or encouraging them to keep their appointment and to keep them on track for their case, for a case completion success. [Chief Executive Officer]

Despite these funds, respondents expressed strong feelings about the remaining gaps in dental care. A Physician/Chief Medical Officer remarked on the inadequacy of dental care access:

We need an 'Affordable Dental Care Act.' That's what we need in America, because it's just a terrible shame. [Physician, Chief Medical Officer]

The respondent continued to comment on the issues that arise, even if access is available:

Medicaid doesn't pay very well for dental work. So I can send my patients to a dentist, but they can't afford to pay for anything. [Physician/Chief Medical Officer]

Other sources of funding

A few of the clinics remarked on the sources of funding they have been able to seek for expanding their oral health services, as well as the limitations of this funding. For example, a moderately integrated clinic mentioned that they were working on a grant "just to do an oral health assessment and work on oral health needs." A highly integrated clinic remarked on a state grant that they had received:

Well, we have a grant for instance that we got from the state. I believe it's a \$9 million grant over three years and it's to address health care disparities in our city...child oral health is one of our five [health topics] that we chose. [Chief Operating Officer]

Fluoride

Many state Medicaid programs reimburse pediatricians and other health clinicians to apply fluoride varnish in the medical office. Of the six federally qualified health centers analyzed in this study, one moderately integrated and one clinic with advanced integration reported integration of fluoride varnish into pediatric well visits. Both of these clinics mentioned that they were aware that reimbursement for fluoride is available.

The moderately integrated clinic also noted that fluoride is a source of revenue for the health center, but they have come across issues since integrating fluoride into the practice.

Even the varnish fluoride program has its restraints. We are not able to apply varnish to patients with certain specific insurance pairs, because they don't reimburse for the cost of the varnish or the time or anything like that. And instead, we don't want to discriminate between insurance companies and we give the patients a choice. If their insurance doesn't pay for it, we are required to send them out a bill for that service. And that could cost the patient anywhere between \$20 and \$25. And that is a huge amount that the patients can't afford to pay. So there are constraints in terms of how we apply or use the varnish program and preventative programs as well. [Chief Medical Officer]

A Chief Medical Officer in the clinics that had not integrated fluoride varnish into the pediatric medical office noted that they were aware that Medicaid pays for the varnish application, while a nurse at another clinic was not sure if the state provided reimbursement.

5. DISCUSSION

Our findings confirm and elaborate on previously recognized facilitators of integration: the importance of oral health champions for integration into primary medical practice, designation of an oral health team leader role, inclusion of oral health charting in the electronic medical record, and the existence of a collaborative team. We also identified significant barriers ingrained in systems of care delivery: division into professional silos, lack of training, lack of exposure to and familiarity with existing professional guidelines, lack of interprofessional collaborations, and low levels of EMR capacity. Surprisingly, co-location of pediatric medical and dental services did not determine the level of integration of oral health prevention into pediatric well-child visits. Geographic location, size of clinic, financial stability did not appear to be major determinants of integration. While resources clearly play a part in decisions about clinical care priorities, the catalyst for change was the presence of imaginative leaders at the top and bottom of the hierarchy who had long-term vision and leadership.

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Across all clinic roles, FQHC employees described a shared commitment to children's health and a common vision about the importance of prevention and coordinated care, suggesting a positive approach to testing out integration, as long as leadership is supportive at both the top and the bottom of the institutional hierarchy. There seemed to be promise for leadership engagement among the sites, with some sites reporting oral health champions, who were actively involved and whose efforts were widely-known, particularly in clinics with more integration. Many respondents across the continuum noted the importance of a team leader, and administrators understood the need for a long-term view when envisioning favorable outcomes due to integration.

Nevertheless, comments from interviewees suggest a potential mismatch between a system of health care delivery that is rigid and role-specific and an intervention (the introduction of oral health into pediatric well-child care) that requires a high level of flexibility and willingness to adapt. Integration presents a complicated set of tasks and challenges and requires additional personnel and protocols as well as the breakdown of traditional professional silos of expertise and practice.

Designation as a patient-centered medical home seems to have bolstered the idea of working together as a team, a necessary component of integration. Many respondents across the continuum echoed this team identity and also the value they placed on open and consistent communication, particularly for the betterment and understanding of their patients' health. This desire for communication was evidenced by existing activities such as regular meetings and in-services, though some concerns arose as to balancing oral health topics with competing clinic priorities.

While the value of communication existed across the continuum, major challenges were reported. One such friction was the lack of integration among electronic medical records, particularly at sites that were co-located but had two different medical record systems. Comments regarding the integration of these records demonstrated ambivalence, with some respondents reporting a high value and desire for integration, while others expressed doubts about the likelihood or feasibility of using similar systems or charting in each other's records when systems differed. Concerns from staff at one clinic with advanced integration were raised as to whether oral health was even charted regularly in existing systems. An important reported source of friction was related to boundaries of specialty and expertise, with interviewees from both pediatrics and dentistry expressing some reluctance to cross beyond recognized areas of expertise. All of these factors may contribute to the lack of awareness, in the pediatric environment, about the extent of their colleagues' knowledge and actual practices at many levels of care delivery across the continuum of integration.

Respondents emphasized that for implementation to be compatible, it must work well within existing systems and workflows. Referral systems, payments systems, and clinical protocols and EHRs were just some of the systemic changes mentioned. There was also a large concern over how implementation would affect an alreadybusy environment, particularly in terms of the patient flow and hours outside of the exam room in meetings and trainings. Some administrative staff offered willingness and solutions to overcoming this challenge.

Clinicians identified significant parental knowledge deficits and misconceptions; a lack of parental familiarity with feeding practices and oral hygiene habits that promote strong, healthy teeth and gums; an emphasis on crisis care; and a belief that oral healthcare is not necessary for babies, toddlers and young school children. Many providers demonstrated considerable knowledge about the social and economic determinants of parental

knowledge deficits and children's poor oral health status and were sympathetic to the challenges FQHC patients in this study faced in providing for their children's multiple needs.

As Table 1 demonstrates, the potential for integration of oral health into pediatric practice in the settings where our most vulnerable children receive their care is complex, and not explained by a face value analysis of clinic characteristics. Collection of background data did not suggest specific factors acted as facilitators or barriers to integration. Unexpectedly, neither structural determinants, patient characteristics, geographic location, nor colocation of pediatric medical and dental units near each other could be identified as a predictor of the level of integration of oral health care into pediatric well child services in these six FQHCs. Clinic organizational structure did not appear to be a determinant; we found different models for decision-making (hierarchical vs. inclusive) at each level of integration.

In State 2, both administrators and clinicians are aware of the potential for revenue gain but expressed concern about costs that might be incurred and were skeptical about financial support from Medicaid. While there were no internal incentives described for integration, there may be incentives for the organization, such as recruitment of patients and revenue from oral health activities, though opinions about each of these possibilities were mixed across the continuum. All sites reported not having quality improvement procedures in place to document the number of procedures performed or provide feedback to clinicians.

Finally, neither clinicians nor administrators were familiar with the scientific basis behind oral health prevention goals or their professional organization's oral health guidelines. Medical providers at clinics across the continuum were very forthright about their lack of oral health knowledge and even suggested topics for workshops. Information about the current status of children's oral health and evidence supporting various modalities of preventive treatment is available, but it is fragmented and not easy to access. A clinician might visit the Healthy People 2020 website to learn about goals and benchmarks, search the literature for a review of the data about fluoride varnish effects, obtain a copy of the 2014 DentaQuest report to see details about what other clinics are doing, and read the PEW report to see how each state compares for insurance access, but there is no single source to guide a pediatric clinician who is interested in improving oral health status in children.

Resources varied across sites. The topic of funding came up frequently. Staff across the integration continuum were largely unaware of how to procure funding and noted the need for grant writing skills. Municipal funding was reported as unavailable, especially because the clinics are located in economically-depressed areas. Federal funding, state Medicaid funding, and private funding were all mentioned as existing or future possibilities, though three administrators across the continuum noted the problem of sustainability with this type of funding. Time was a highly-sought-after resource in the clinic and concern across the continuum was expressed as to how integration would affect already-limited time in the exam room. Respondents noted that space would need to be optimized and more formalized training was a needed resource, since fluoride varnish training was the only specific formal training mentioned.

External policies and incentives and networking with outside entities clearly have an influence on integration of oral health into pediatric well-child visits in FQHCs. Typically, the more integrated clinics appear to benefit from their outside environments more than those not integrated. Comments from respondents, however, suggest a need for stronger support from the outer context in order to create a more conducive environment for oral health integration.

Overall, complexities, challenges and costs associated with the intervention appear to be balanced by the potential to improve children's oral health, take advantage of positive patient-provider relationships, and approach problems more systematically.

6. RECOMMENDATIONS

Interviews analyzed in this study shed light onto the barriers and facilitators that affect the process of integrating oral health prevention strategies into pediatric well-child visits as a standard of care. Across the continuum of integration, we note opportunities for improvement.

Recommendation 1: Identify champions and foster leadership from the top of institutional hierarchies down to grass roots quality improvement committees.

Action Item 1.1: Widely disseminate evidence that supports inclusion of oral health promotion strategies in pediatric practice and relevant policy statements from professional organizations to FQHC CEOs, Chief Medical Officers, clinicians, and support staff.

Link staff to online resources and electronic mailings from the American Academy of Pediatrics, the American Academy of Pediatric Dentistry, and others.

Action Item 1.2: Review internal decision-making culture and structures to assess potential to be inclusive and conducive to change.

Integration of care requires bringing together multiple stakeholders whose focus is finding new, creative ways to implement desired changes. Acknowledging and moving past clinical specialty silos is crucial for creating and sustaining a multi-departmental collaboration.

Action Item 1.3: Appoint two team leaders or oral health champions (one from pediatrics and one from dentistry, who are in regular communication with upper-level management about progress and next steps for integration.

Activities could include highlighting and promoting existing best practices among staff and forums to disseminate available resources.

Action Item 1.4: Form an oral health committee, comprised of many stakeholders involved in planning, implementation, and quality improvement.

This committee will be most effective if it includes a balance of medical and dental representation and both administrative staff and a representative selection of clinical staff across roles.

Recommendation 2: Create an internal mechanism to reward FQHC staff champions, innovators and consistent oral health providers, and establish external incentives for FQHCs that choose to implement integration of oral health into pediatrics within their healthcare systems.

Action Item 2.1: Introduce internal incentives to develop and sustain integrated care within FQHCs.

Oral health champions already exist in all clinics, and are crucial to the introduction and ongoing implementation of integrated care. FQHCs need to identify and recognize these staff members, while
supporting them with ongoing incentives that are relevant to their efforts. Internal incentives could include over base pay for organizing oral health training and meetings, formal recognition in a newsletter, or simply supportive measures such as release time to enhance schedule flexibility, allowing staff leaders to make room for oral-health related activities among their regular responsibilities.

Action Item 2.2: Create policy incentives for integration within local, state and federal healthcare systems.

Possible solutions could include federal, state or local health system-implemented incentives for clinics that integrate oral health into pediatrics, similar to the enhanced reimbursement for clinics that receive the medical home designation. Public recognition of oral health efforts is important, but needs to be accompanied by a financial benefit for providing integrated health care. Funding for technical assistance and consultation from an agency such as AHRQ would provide expert advice to clinics that are just starting to design an integrated program.

Recommendation 3: Foster leadership at the national level by creating and disseminating a centralized 'go-to' virtual source for oral health information resources.

Action Item 3.1: Create virtual resources for clinics interested in integration.

This study of the barriers and facilitators to integration could be the basis for online resources and reports for clinics wanting to integrate oral health into pediatrics. Resources should prioritize strategies for integration, such as how to incorporate oral health activities into existing systems and flow, maximizing patient wait time in the waiting or exam room (as an opportunity for oral health activities), creating successful referral procedures with mechanisms for tracking, and cross-training administrative staff on billing procedures.

Action Item 3.2: Create centralized location for oral health information sharing through professional organizations.

At present, providers are getting oral health information from scattered sources. The scientific basis for oral health prevention goals could be disseminated in one central, concise format, hosted through interorganizational efforts, such as the American Academy of Pediatrics (AAP) and the American Academy of Pediatric Dentistry, with support from federal organizations. Actions must also be taken to assist the ongoing effort of the AAP to disseminate its guidelines at the practice level, through a variety of modalities, such as conferences, trainings, newsletters, and perhaps fellowships from the AAP. Federal support for the AAP oral health learning modules would create sustainability of the interest of pediatric organizations in oral health integration.

Recommendation 4: Implement standardized, ongoing quality improvement measures.

Action Item 4.1: Evaluate documentation and ease of extraction of data about oral health procedures and prevention counseling, and address barriers for data collection.

Nearly unanimously, respondents noted the lack of data to assess and drive oral health efforts.

Action Item 4.2: Establish a standing oral health quality improvement committee that is designed to include both leadership levels and daily practice levels of the organization.

Steps must be taken to study the delivery of oral health procedures such as fluoride in pediatrics, and assess outcomes for patients. It is also important to evaluate the effects of integration on existing systems, patient flow, and patient satisfaction, discovering both economies of scale and unexpected events. These data will guide implementation efforts and permit adaptation to each clinic's unique context and patient population.

Action Item 4.3: Provide regular feedback to providers on oral health activities.

Once data have been collected and analyzed, results must be disseminated back to providers and clinic administrators in a practical, non-judgmental way. Reports might feature process indicators, such as the percentage of the target population reached for fluoride application, and how providers as a whole compare to colleagues and to national data. Patient outcomes will be more difficult to measure in clinics without co-location, but notes in the EMR after visual inspection could show an improvement in the percentage of children without decay and/or children presenting with dental work, over time, and feedback about improvements in patient oral health status would be a strong driver for wider adoption.

Recommendation 5: Provide greater opportunities for training pediatric staff in preventive oral health.

Action Item 5.1: Provide onsite workshops and links to useful oral health materials for all pediatric staff.

Pediatric physicians and nurse practitioners noted the deficiency in oral health training in the medical curriculum. Respondents suggested a variety of topics, such oral health's relationship to a child's overall health and how to do a proper oral health assessment, among others. These topics could be the focus of ongoing inter-departmental meetings between co-located dental and pediatric departments or with the FQHC and local dental practices. Integrated care must involve all staff, beyond providers. Nearly all respondents reported never attending oral health training, except for fluoride training for MAs and nurses. Fluoride varnish training could be made available by public health departments, particularly for clinics wanting to integrate. Clinics or public health departments could also apply for training grants for pediatric clinicians, nurses, and medical assistants (*Training up for Oral Health!*) similar to the effort that SAMHSA undertook to spread Screening and Brief Intervention (SBI) to medical students, residents, advanced practice RNS, and nursing students.

Recommendation 6: Increase funding for oral health in FQHCs and increase awareness of funding opportunities.

Action Item 6.1: Increase funding opportunities and workshops for how to use funding effectively.

Respondents were largely unaware of funding for oral health or how to go about looking for funding opportunities. Workshops to improve clinicians' grant writing skills are needed, as well as workshops on how to make existing or awarded funds sustainable.

Action Item 6.2: Secure funding to hire additional staff or expand present staff with a particular focus on connecting pediatric and dental efforts.

One site noted that funding made available to them was used to hire a dental case manager and went on to note the success of such a position in a FQHC in connecting oral health efforts between dental and pediatrics. Duties could include case management, patient navigation, care coordination, organizing cross-departmental trainings, identifying and facilitating community partnerships, and working with information technology to ease the barriers to EMR patient information sharing. If hiring additional staff is not an option, clinics hoping to integrate could focus on expanding the role of auxiliary staff, such as MAs, nurses, or dental hygienists for the same purposes. Any expansion of staff roles must include an agreed-upon scope of work, training to comfort levels, and sensitivity to staff concerns about being over-burdened.

Recommendation 7: Ease the flow of communication between pediatric and dental clinicians by making integrated electronic medical records available to FQHCs.

Action item 7.1: Create universal, integrated electronic medical records systems that can cross-talk across specialties, with permission for dentists to write in pediatric problem lists and pediatric clinicians to write in dental problem lists, allowing colleagues to communicate regularly via EMR.

One path to this goal could include creating an oral health incentive in the ACA to push for meaningful use of cross-communication between electronic medical records in FQHCs. Meanwhile, existing pediatric EMRs could adopt templates for documenting oral health guidance, assessment and preventive procedures in the pediatric record, enhancing the likelihood of documentation and data collection and analysis. These efforts should consider ease of data extraction in their development process.

Recommendation 8: Improve community oral health literacy in ways that are culturally-appropriate and multigenerational.

Action item 8.1: Efforts at integration should be coupled with community-wide efforts to increase the awareness and understanding of oral health.

These efforts must be reach parents, grandparents and children themselves to increase oral health awareness. Topics could include the rationale for dental care, avoidance of sticky foods, the importance of baby teeth, the myth of fluoride risks, etc. Oral health literacy messages should increase awareness of access to dental services while increasing awareness of pediatric dental coverage under Medicaid.

Recommendation 9: Advocate for and implement supportive oral health policy.

Action item 9.1: On the national level, advocate for more universal coverage for oral health.

Despite advances under the ACA in medical healthcare coverage, dental coverage is mandated to be offered, though not required to be purchased. Families may have trouble affording coverage or meeting

co-pays once coverage is obtained. For parity to occur, and oral health to improve, dental coverage must be bundled into medical coverage.

Action item 9.2: On the state level, advocate for reimbursement for specific oral health services provided at the well child visit.

Itemized reimbursements for oral health preventative care, such as anticipatory guidance, fluoride varnish application, and assessment, are also essential. Reimbursing one rate for well-child visits may result in less care delivery and neglect of important oral health topics.

7. CONCLUSION

Early childhood caries (ECC) remains on the nation's healthcare agenda as the most common chronic childhood disease. The effects of ECC and evidence-based methods to prevent ECC are known in the literature, yet issues concerning access to dental care, the ever-changing climate of healthcare delivery, and socio-economic disparities in the experience of ECC contribute to the complexity of implementing evidence into practice. For these reasons, it is necessary to explore new contexts for oral health prevention, treatment, and education. The federally qualified healthcare center (FQHC) is an exemplary setting for study and action, because it is where the most vulnerable U.S. children receive their care. In this study, we applied the tools of implementation science to examine barriers and facilitators to integration as they occurred in daily clinical practice within six FQHCs in two states and offer evidence-based recommendations to assist in reinforcing facilitators and overcoming barriers.

Identified facilitators	Identified barriers
Presence of oral health champions & team	Specialty and professional silos, with reluctance
leaders (vision)	to venture beyond traditional expertise
Staff and leadership environment conducive to	Existing care delivery stressors: high volume,
exploring anticipatory guidance, fluoride	competition for exam room space and time, and
varnish application and other approaches	high staff turnover
Interdepartmental collaboration, with care	No electronic medical record integration
coordination	
Availability of oral health training across clinic	Absence of quality improvement procedures and
roles	active monitoring
Inclusive decision-making structures	Rigid hierarchical approach to change
Opportunities to generate clinic revenue from	Lack of motivation and systems to implement
oral health activities	robust dental referral and follow-up procedures
Medical home designation ("team" mentality)	Inadequate oral health training of pediatric staff
Willingness to expand traditional staff roles for medical and dental assistants	Implementation costs
Collaboration of pediatric clinicians with	Minimal knowledge about oral health guidelines
external dental agencies and practices (if not	from the American Academy of Pediatrics and
co-located)	the American Academy of Pediatric Dentistry
Organizational incentives and rewards, and	Absence of awareness of federal statutes
funding to support innovation	requiring FQHCs to include preventative dental services in primary health care delivery

Table 2: Barriers and Facilitators to oral health integration into well-child care in FQHCs

The analysis conducted for this report demonstrates the potential to increase these facilitators and overcome these barriers by: (1) informing staff regarding the importance of oral health in their population and expectations for clinic oral health activities, as specified by FQHC oral health guidelines;

(2) training in oral health prevention skills to enhance clinician expertise; (3) meaningful collaboration between pediatric and dental specialties to promote readiness for change; (4) designation of an oral health "champion"; and (5) promotion of health integration practices. Surprisingly, neither clinic size and resources nor the presence of co-located pediatric and dental services were predictors of integration. The most salient predictor of successful oral health integration was the vision, leadership and commitment of top administrators, working with clinicians who were oral health champions.

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Appendix 1: The Center for Research to Evaluate and Eliminate Dental Disparities

CREEDD: The Center for Research to Evaluate and Eliminate Dental Disparities at the The Boston University Henry M. Goldman School of Dental Medicine

WWW.BU.EDU/CREEDD

About CREEDD

The Center for Research to Evaluate and Eliminate Dental Disparities (CREEDD) is funded by a 7-year grant from the <u>National Institute of Dental and Craniofacial Research</u> (NIDCR), part of the <u>National Institutes of Health</u> (NIH). <u>Drs. Raul Garcia and Michelle Henshaw</u>, from the Boston University <u>Henry M. Goldman School of</u> <u>Dental Medicine's</u> Department of Health Policy and Health Services Research, serve as Co-Directors of the Center. A diverse, multidisciplinary and multi-institutional team implements community-based intervention research projects aimed at reducing early childhood caries (ECC). CREEDD is one of five national centers for research to reduce oral health disparities. Three of these centers, including CREEDD, make up a collaborative network devoted to ECC research. The other two centers in the ECC network are based at the <u>University of Colorado</u>.

The Mission of CREEDD

CREEDD's mission is to improve oral, dental and craniofacial health through research, research training, and the dissemination of health information, with a focus on the elimination of oral health disparities. CREEDD's efforts build on a strong foundation of early and continuous community engagement, community-based research interventions, integrated training and career development, broad dissemination of research findings, and targeted health policy initiatives.

Project 1

<u>Drs. Norman Tinanoff, Judith Bernstein, and Paul Geltman</u> serve as co-investigators. This project aims to investigate the integration of oral health initiatives in the medical setting, particularly pediatric primary care well-child visits. Using the context of federally qualified healthcare centers (FQHCs), Project 1 seeks to reach the most vulnerable pediatric patients by exploring the barriers and facilitators to oral health activities such as fluoride varnish application and patient-centered oral health counseling, and testing potential interventions to improve oral health through activities at the time of a well-child visit.

Project 2

<u>Drs. Michelle Henshaw and Belinda Borrelli</u> serve as co-investigators for Project 2. This project takes a multimodal community-based approach to ECC reduction addressing the chronic, infectious, and multifactorial nature of dental caries. The project aims to equip caregivers with the skills to become involved in the prevention and management of ECC while fostering community and environmental support for decreasing ECC risk factors. This targeted approach takes place in public housing developments, working with families through community-based participatory research, and tests whether a community-based multi-modal intervention will reduce the two-year ECC incidence of children ages 0-5.

Appendix 2: Background Information Spreadsheet Items

Length of Time in Operation

- 1. Adult clinical services
- 2. Pediatric clinical services
- 3. Pediatric clinicians providing any oral health care (information, assessment, referral, fluoride application)
- 4. Partnership/contract with outside dental practice
- 5. Co-location of dental and pediatric services
- 6. Length of time Medical Director has been serving in that position
- 7. For adults: integration of medical and dental services
 - (a) Same charting system?
- (b) Same appointment system?
- (c) Same billing system?
- 8. For children: integration of medical and dental services
 - (a) Same charting system?
 - (b) Same appointment system?
 - (c) Same billing system?

Size of Geographic Area Served

9. Catchment area (i.e., by zip codes, miles, census tract)

- 10. Population of catchment area
- 11. % of out-of-state patients served?

Patient Demographics (If you use a different breakdown, please give us what you use)

12. % Male and % Female

13. Number of patients in each age category

- (a) 0-1 years
- (b) 2-3 years
- (c) 4-5 years
- (d) 6-13 years
- (e) 14-18 years
- (f) 19-21 years
- (g) 22+ years
- 14. Ethnicity/Race distribution (%'s)
- (a) Non-Hispanic White
- (b) Hispanic or Latino
- (c) Non-Hispanic Black
- (d) Asian, Pacific Islander
- (e) American Indian, Alaska Native
- (f) Other: (Feel free to add lines for additional groups)
- 15. Language
- (a) Languages spoken by parents/guardians of pediatric patients
- (b) Percentage of patients whose families have limited English proficiency

- (c) Is a language interpreter available? (Y/N)
- (d) If yes, for which languages?
 - i. Contracted service (i.e., AT&T)? (Y/N)
 - ii. In-house service? (Y/N)
- 16. Insurance distribution for children:
- (a) Private (%)
- (b) Medicaid (%)
- (c) Disability (%)
- (d) Self-pay (%)

Number of Employees Having Contact with Pediatric Patients

17. RNs

18. Nurses' Aides/Medical Assistants

19. Clerical staff

20. Physicians

21. Advanced Practice Nurses

Number of Pediatric Positions Currently Unfilled

22. RNs

23. Nurses' Aides/Medical Assistants

- 24. Clerical staff
- 25. Physicians
- 26. Advanced Practice Nurses

Budgeting and Costs

27. Overall operating budget

- (a) Adult services
- (b) Pediatric Services
- (c) Dental Services

28. Mean cost per visit of providing services for pediatric patients:

- (a) per visit cost for pediatric medical services
- (b) per visit cost for pediatric dental services
- 29. If dental and pediatric care are co-located, are there separate dental and medical budgets? (Y/N)
- 30. Percent of unreimbursed care in the last fiscal year

31. Have you received any foundation or state, national, or local grants to support inclusion of oral health within the last five years? (Y/N)

(a) If so, how much and which types?

Medical Home

- 32. Has your center received this designation? (Y/N)
 - (a) If so, when?

(b) If no, are you planning to apply for a medical home designation in the next year? (Y/N)

Collaborative Relationships

33. Do you collaborate with community organizations that do public health oral health work? (Y/N)

34. Do you collaborate with community organizations that do work with children? (Y/N)

- 35. Do you have a Community Advisory Board (or some equivalent)? (Y/N)
 - (a) If so, how often does it meet?
 - (b) If so, how many people are on that board?

(c) If so, what types of people are on it (professionals, local advocates, residents, etc.)?

Dental Services

- 36. Services on site? (Y/N)
- 37. Do you offer preventive care? (Y/N)
 - (a) Do you offer topical fluoride application? (Y/N)
 - (b) If so, by whom is the topical fluoride applied? (i.e., medical personnel, dental personnel, or both?)

Electronic Health Records and Billing

38. Do you use Electronic Health Records (EHR)? (Y/N)

- (a) What program do you use for your EHR for medical services?
- (b) What program do you use for your EHR for dental services?
- (c) If separate EHR systems, can medical EHR be viewed/charted from dental EHR? (Y/N)
- (d) Can pediatricians find out what medications have been prescribed by dentists? (Y/N)
- (e) Can dentists see the medications prescribed by pediatricians? (Y/N)
- (f) Can a dentist chart on a problem list about oral health for a medical doctor to see? (Y/N)
- 39. Does your center process billing for both medical and dental? (Y/N)
 - (a) If co-located, do medical and dental get billed through the same company? (Y/N)
- (b) If the medical provider applies topical fluoride at a pediatric medical visit, is it billed for routinely? (Y/N)

Referrals

- 40. Do you have a referral network for oral health needs?
 - (a) If so, are there any formal agreements and contracts with dentists for seeing your patients?
- 41. Do you collaborate with a dental school?
 - (a) For patient referrals?
 - (b) For physician training?
 - (c) For research projects?
- 42. Is there a system in place for follow-up and tracking for results of referrals?
- (a) If yes, is this system paper, postcard, EHR, phone call, questioning upon revisit, note from dentist to whom referred, other (please explain)?
- 43. Use of technology to communicate with families of pediatric patients
 - (a) automated phone calls (Y/N)
 - (b) appointment reminder cards (Y/N)
 - (c) text messaging (Y/N)

Appendix 3: Key Informant Interview Schedule

Introductory Questions

- I. What is your role/set of responsibilities in the clinic?
 - a. If clinician: What type of clinician are you? (e.g., Pediatrician, Nurse Practitioner, Dentist, Nursing Assistant, Nurse Manager)
 - b. If non-clinician: What is your title?

Relevance of oral health for general health

1) How would you describe the oral health status of children who come to your community health center (CHC)? Are there special oral health problems that these children face?

2) Tell me about the relationship of oral health to these children's overall health? [PROBE: Can you think of any examples of how oral health is related to pediatric health?]

3) Do you think pediatric clinicians have any responsibility to provide guidance for oral health care? If so, what does that responsibility include?

4) Have you heard about the oral health recommendations and guidelines established by pediatric professional societies, like the American Academy of Pediatrics? If so, where did you hear about them?

a) If you have heard about the guidelines, can you recall any of the items they cover? If so, which ones do you recall?

5) What value do you think parents place on: Brochures about oral health? On gifts of toothbrushes, etc.? On reminders sent out before an appointment?

Current oral health practices at your center

6) What do pediatric clinicians do about oral health anticipatory guidance in your CHC? (CLINICIAN-ONLY) [PROBE: If 'not much,' ask for specific activities.]

a) What are your current practices for: Charting? Making referrals? Tracking results of referrals? (CLINICIAN-ONLY)

b) Do you use text messages to communicate with patients? If so, what type of messages do you send? [PROBE: appointment reminders, preventive health tips/information, test results] (CLINICIAN- and DENTIST-ONLY)

c) Do you perform any type of caries risk assessment? If no, continue to (d).

If yes, ask:

i. Do you look at the teeth and gums?

ii. Do you use caries risk assessment tools? If no, continue to# d.

iii. If so, which ones?

iv. What is the average time needed to complete caries risk assessments?

v. What are the pros and cons of the tool(s)? Would you suggest any changes to the tools? (CLINICIAN-ONLY)

d) Do you use electronic health records (EHRs)? [If no, continue to (e)]

If yes, ask:

i. Is oral health incorporated into the electronic health records?

ii. Do you use an oral health template in your EHRs?

iii. What are the pros and cons of using EHRs to chart oral health information? iv. Any suggested changes for using EHR for oral health charting? (CLINICIAN-ONLY)

e) Have you ever participated in trainings related to oral health? Has anyone in your office participated in trainings related to oral health? (CLINICIAN-ONLY)

Feasibility of an oral health intervention as part of pediatric primary care

7) What do you think are the potential benefits of oral health activities during a well-child visit --- for families, for your center and for the community?

8) What do you think are the potential financial and other costs associated with oral health activities during a well-child visit?

9) Do you know if your CHC is certified as a medical home or is working toward that designation? How could the idea of a medical home apply to oral health issues at the well-child visit?

10) Does your facility provide oral health services as part of the well-child visit, or in a separate dental clinic, both, or neither? [PROBE: How are those services organized? Who delivers them? What is the scope of those services?]

a) What do you think most parents understand about early childhood caries (ECC) risks and consequences?

b) How important do you think oral health is to most parents?

c) Does parents' interest in oral health change how you communicate about it? If so, how? (CLINICIAN-ONLY)

d) Do you promote oral health services (like regular dental visits) to existing patients? If so, how?

e) Are there any issues that are unique to a CHC like yours that affect how you might incorporate oral health in a well-child visit? [PROBE: Income? Education? Language? Culture?]

f) How do you think the cultural beliefs and/or values of your patients' families help or hinder the inclusion of oral health prevention in the well-child visit? (CLINICIAN-ONLY)

Acceptable methods to include oral health prevention in well childcare

11) Where would you start to include oral health in well childcare? [PROBE: Age group? Location, e.g., in an unused room or waiting area in the pediatric clinic, or in the exam room while waiting for the clinician? Type of procedure, e.g., mouth inspection, fluoride application? Type of information? Providing brushes and toothpaste?]

a) A Dental Assistant usually helps the dentist with procedures. How would you feel about expanding that role to include some form of navigation between pediatric and dental services? (CLINICIAN-ONLY) [PROBE: e.g., making medical appointments, making sure records from the dentist go into the medical record]

Perceived facilitators

12) Is there an oral health champion in the office, i.e., someone who might be enthusiastic about inclusion of oral health activities in the well-child visit? [PROBE: What is that person's current professional role?]

a) If yes, would that be a person you might feel comfortable with helping to pilot new oral health activities in a well-child visit or enrich existing services?

13) What would make it easier for clinicians to include oral health in the prevention messages they deliver as part of wellchild care (along with the usual anticipatory guidance, e.g., about bike helmets and protective gear for sports, etc.)? (CLINICIAN-ONLY) 14) Where could your CHC seek new sources of funding for pediatric oral-health-related activities? [PROBE: Would anyone at your center be willing to put together a foundation proposal? Could you go to your city council? Seek benefactors?]

Perceived barriers to inclusion

15) What are some of the challenges to introducing some type of pediatric oral health activities as part of the well-child visit?

Potential strategies despite barriers

16) Given your current resources, what pediatric oral health activities might you be able to realistically adopt as part of a well-child visit? [PROBE: Informational brochures? Fluoride? Referral system? Including oral health in charting?]

17) How could you encourage pediatric clinicians to participate [or other pediatric clinicians if interviewing a CLINICIAN]?

a) Would the administration be supportive? If so, what would help from their end?

18) What could a dentist tell you about the child you are seeing that would be useful for your medical care for that child? (PEDIATRIC CLINICIAN-ONLY)

19) What could a pediatric clinician tell you about the patient you are seeing that would improve the oral health care you deliver to that child? (DENTIST-ONLY)

Expected economies of scope if you adopted those strategies

20) What amount of revenue could oral health activities during a well-child visit bring into the clinic? (CEO and MEDICAL DIRECTOR ONLY)

21) Do you think the addition of oral health activities as part of the well-child visit would attract patients to the clinic? If so, could the clinic handle an increased volume of patients?

Possible diseconomies of scope

22) Can you identify any negative factors related to inclusion of oral health during a well-child visit?

Avenues to increase sustainability

23) What issues would be important to think about in setting up or enriching oral health activities during a well-child visit so inclusion of oral health becomes the standard of care, not just a trial that comes and goes? Resources (financial, staff, space)? Clinical protocols? EMR Templates or electronic communication across differences in medical records? Co-location of pediatric and dental services? Staff training? Assignment of oral health activities to a particular role, like a nurse-practitioner? Designation of a team leader for oral health activities?

Organizational Structure

24) How are decisions (about adopting new activities in your center) made? Who makes them? Do decision makers involve the adopters in planning the implementation of new programs or policies?

Appendix 4: Site Direct Observation Checklist

Pre-Observation Day Checklist
Is there a website for the clinic? \Box Yes \Box No
If yes, what is the content of the website? (Check all that apply)
Descriptive Content
Patient Forms
\Box List of phone numbers for dental practice
List of phone numbers for pediatric practice
Contact information for providers
Oral health informational materials
Other health informational materials:
Online appointment scheduling
□ Other:
I. Surrounding Area
1. Type of location: 🗆 Urban 🗆 Rural
2. Evidence of public transportation within a two-block radius? (Train, Bus) \Box Yes \Box No
3. Is parking available for patients? \Box Yes \Box No
 3a. If yes, what kind of parking? □ Metered □ Garage □ Other:
4. Does there appear to be a pharmacy or drugstore nearby the health center? \square Yes \square No
4a. If yes, is it co-located with the health center? \Box Yes \Box No
5. Appearance and safety:
5a.Does there appear to be a homeless population around the outside of the health center? \Box Yes \Box No
5b. Is there garbage, trash, or broken windows on the ground or around the health center? \Box Yes \Box No
5c. What is the level of vehicular traffic around the health center? (circle a number)
No traffic Heavy traffic
6. Does the area around the health center appear safe for families? (circle a number)

12345Appears very unsafeAppears very safe

	. Is there artwork in and around the clinic? \Box Yes \Box No			
. Phone communication				
. Is there a direct phone line to				
Pediatric Services?	□ No			
Dental Services?	□ No			
Central Number Only? 🗌 Yes 🛛	□ No			
. Language options on menu for the central i	number: (check all that apply)			
English				
Spanish				
□ Other:				
. Are translation services available for the ph	hone call? 🗆 Yes 🗆 No			
. What time periods are available for appoin	ntments? (check all that apply)			
Pediatrics:	Dental:			
Weekdays	Weekdays			
Weekends	□ Weekends			
Evenings	Evenings			
I. Physical Plant and Patient Flow				
. Is there a greeter or information desk upor	n arriving at the health center? \Box Yes \Box No			
. Is there artwork on the walls?				
. Is there artwork on the walls?	·)			
. Is there artwork on the walls? . Does the lobby have (check all that apply)	()			
 Is there artwork on the walls? Does the lobby have (check all that apply Physician/floor directory Map(s) 	()			
 Is there artwork on the walls? Does the lobby have (check all that apply Physician/floor directory Map(s) Other signage: 	()			
 Is there artwork on the walls?	/) someone at the central information desk when you arrive?			
 Is there artwork on the walls?	/) someone at the central information desk when you arrive? al clinic from the pediatric department (if co-located): Floors: Buildings:			
 Is there artwork on the walls?	/) someone at the central information desk when you arrive? al clinic from the pediatric department (if co-located): Floors: Buildings: dental and pediatrics? Yes No			

If joint,

7a. what is the combined waiting room size for both pediatrics and dental? (Circle a number)

			<u>1</u>	2	3	<u>4 5</u>
		Small (<5	chairs)			Large (>15 chairs)
7b. How mar	ny seats are occup	ied in the j	oint wai	ting room	?	
lf separate , 7c. What is t	he waiting room	size for ped	liatrics?	(Circle a r	umber)	
		Small (< 5	<u>1</u> chairs)	2	3	4 5 Large (> 15 chairs)
7d. How ma	ny seats are occu	pied in the	pediatri	c waiting I	room?	
7e. What is t	the waiting room	size for der	ntal? (cir	cle a num	ber)	
			1	2	3	4 5
		Small (< 5	 chairs)	-		Large (> 15 chairs)
7f. How man	y seats are occup	ied in the p	ediatric	waiting ro	oom?	
8. Are there lines Pediatric Dental?	to get to the from cs? Yes No Yes No	t desk/regi	stration	?		
		c c				
9. How long are t	ne average wait t	mes for pa	tients to	Dental:	by a heal	ith provider?
$\Box = < 5 \text{ minu}$	ites			□ =< 5 m	inutes	
\Box 6 – 10 mir	nutes			$\Box 6 - 10$	minutes	
□ 11 – 15 m	inutes			□ 0 ±0 □ 11 – 1º	5 minute	s
□ 16 – 20 m	inutes			\square 16 – 20) minute	s
□ > 20 minu	ites			 □ > 20 m	inutes	-
10 What is the n	atient load like fo	r dental an	d medic:	al nrovide	rs	
Per dav?	Dental:	Medic	al:	ai proviac	15	
Per week?	Dental:	Medic	al:			
Per month?	Dental:	Medic	al:			
IV. Payment						
1. Insurances acco	epted:					
🗌 Privat	te					
🗌 Public	c (Medicaid, Medi	care, etc.)				

- □ Other: _____
- \Box No insurance

- 2. Does the clinic accept cash payments for co-pays and/or procedures? \Box Yes \Box No
- 3. Is there an office for patient financial services? \Box Yes \Box No

If yes, where is this office located in relation to the pediatric department?

V. Evidence of Oral Health Activities

- 1. Where do oral health activities (education, anticipatory guidance) occur?
- 2. Is oral health literature available in the pediatric clinic? \Box Yes \Box No

2a. If yes, where?

- □ Waiting room
- 🗆 Exam room
- □ Other:_____

2b. In what form?

- Handouts
- □ Tri-fold pamphlets
- 🗆 Online
- Other: _____

2c. Is oral health literature offered in languages of than English? □ Yes □ No If yes, what other languages? _____

3. Are there advertisements for oral health services in the pediatric clinic? \Box Yes \Box No

3a. If yes, where?

- □ Waiting room
- Exam room
- Other:
- 3b. If yes, which items? (Check all that apply)
 - Literature
 - □ Toothpaste
 - □ Toothbrush
 - Other:_____

3c. Who receives these items?

🗌 Child

□ Parent/Guardian

Integration of Oral Health into Pediatric Medical Primary Care in Community Health Centers

□ Other:

4. Where are oral health supplies or preventative materials (brochures, toothpaste, etc.) to hand out stored? Does the staff know where the materials are kept?

🗆 Exam room

- □ Storage closet
- □ Staff doesn't know
- □ Other:_____

5. Are oral health items given to patients? \Box Yes \Box No

6. Is fluoride varnish available for use? \Box Yes \Box No

- 6a. If yes, where?
 - \Box Pediatric clinic only
 - □ Dental clinic only
 - $\hfill\square$ Both pediatric and dental clinics

7. Who are dental assessments by pediatric staff done on?

 \Box All children

 \Box Certain populations

7a. If certain populations, how are these certain populations identified (targeted)?

8. Are oral health services and assessments documented in the medical record?

Yes:
Paper EMR
No:
Not documented

8a. If EMR, is there a template used? \Box Yes \Box No

Take a blank screen shot of EMR (template, etc.): Type of software: _____

8b. Who performs data entry?

 \Box Secretary

🗆 Nurse

□ Medical Assistant

Clinician

Other:

8c. Does program or paper record contain specific location for charting oral health anticipatory advice? 🗆 Yes 🗆 No

8d. Are there prompts for charting oral health anticipatory advice? \Box Yes \Box No

8e. Is there a checklist or flag for oral health guidance? \Box Yes \Box No

VI. Referrals

1. How is the referral process similar or different from other referrals (to medical specialists)?

2.	What is the method of coordination of medical and dental appointments at follow-up if pediatric and	
dental services are co-located?		

VII. Provider-Patient Communications

1. What languages do you hear health providers speaking?

- English
- □ Spanish
- Other:_____

2. Are health educators multi-lingual? \Box Yes \Box No

2a. If no, are translators available? \Box Yes \Box No

3. Are providers allotted extra time for health promotion communication with patients? \Box Yes \Box No

3a. If yes, how much time?

 \Box < 5 minutes

 \Box 5- 10 minutes

 \square > 10 minutes

4. Do providers appear to be familiar with oral health related apps? \Box Yes \Box No

Other: ______

5. Do you hear providers communicating about any apps related to oral health? \Box Yes \Box No

6. Is there a computer in the exam room? \Box Yes \Box No

6a. If yes, does it appear to be new (\leq 2 years old) or old (> 2 years old)? \Box New \Box Old

6b. Where is the computer located in the room in relation to the patient chair or exam table?

6c. Does it appear that the clinician would be facing away from the patient if on the computer? \Box Yes \Box No

6d. Is there a health education screen saver on the desktop of the computer? \Box Yes \Box No

7. Does the office use personalized provider tablets? \Box Yes \Box No