ORIGINAL RESEARCH

Primary Care Physician Roles in Health Centers with Oral Health Care Units

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Introduction: **Integrating oral health care and primary care is a priority for improving population health. Primary care physicians (PCP) are filling expanded roles within oral health care to secure strong overall health for their patients.**

Methods: **This comparative case study examines the roles of PCPs at 5 federally qualified health centers that have integrated oral health care and primary care. Administrative data were obtained directly from the Health Resources and Services Administration. Key informant interviews were performed with administrators and clinical care team members at each of the health centers. Data were reviewed by 2 experts in oral health to identify emerging roles for physicians.**

Results: **PPCPs' roles in health centers' integration models vary, but 3 distinct roles emerged: (1) the physician as a champion, (2) the physician as a collaborator, and (3) the physician as a member of an interprofessional team. In addition, providing physicians with the necessary training to identify oral health issues was critical to preparing physicians to take on expanded roles in integrated health care delivery models.**

Conclusions: **Regardless of the roles that they play, family physicians can contribute a great deal to the success of integration models. (J Am Board Fam Med 2017;30:491–504.)**

Keywords: **Delivery of Health Care, Health Personnel, Health Resources, Integrated Health Care Systems, Oral Health, Patient Care, Primary Health Care**

Preventable dental diseases are among the most prevalent health conditions affecting Americans' overall health. The ramifications of poor oral health can span a lifetime. For instance, among children, dental diseases are a leading cause of school absenteeism and are associated with poorer performance on standardized assessments.[1,2] Similarly, adults with poor oral health are less likely to be employed than those with good oral health.[3] Poor oral health is also linked to an increased risk of developing a number of serious health conditions and chronic diseases.[4–6]

Moreover, poor oral health places a heavy economic burden on the American health care system. In 2012, roughly 2.18 million emergency department visits were associated with dental conditions, a large number of which were preventable.[7] These visits cost the American health care system $1.6 billion, an average of $749 per visit.[7] Improving Americans' oral health is a population health and health care system priority,[8] and increasing Americans' access to oral health care services is a primary strategy.

Oral health care is a part of overall patient care and includes activities such as risk assessment, health promotion and education, and referral for dental care services.[9] Whereas oral health care focuses broadly on identifying need and activating and engaging patients, dental care focuses specifi-

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cally on the delivery of interventions and restoration to maintain, attain, or restore oral health. Oral health care is within the domain of all health care team members. Increasing access to oral health care is crucial to improving population oral health and achieving population health goals. As more entities assume responsibility for the population's health, addressing the entire patient is essential.

Integrating oral health care with broader health care services, particularly primary care services, has been identified as a strategic priority for improving population health.[10–12] The historic separation of oral health care from the broader health care delivery system has fostered among providers and patients a culture in which oral health is not valued as a part of overall health.[13] Changing this perception, particularly among primary care physicians, is critical to achieving total patient care and to effectively addressing oral health care needs.[13]

Primary care physicians are the foundation of the primary care workforce. They are leaders of interprofessional health care teams that have the potential to effectively provide integrated oral health services within the primary care delivery system, particularly for patients who might otherwise experience barriers to access to oral health care services.[14,15] In 2011, the Institute of Medicine issued a report that recognized that improving oral health in America will require multidisciplinary health care teams working in various settings across the health care system.[11] Since the release of the Institute of Medicine's report, a number of initiatives have been developed that focus on providing primary care physicians with the tools necessary to successfully integrate oral health care and primary care.[12,16] Among these, the Integration of Oral Health and Primary Care Practice developed by the Health Resources and Services Administration (HRSA) outlines 5 "Interprofessional Oral Health Core Clinical" domains that are critical to successful integration[12] (definitions are presented in Table 1). Despite these initiatives, relatively few individuals experiencing a dental problem receive care from physicians,[17] even though nearly 5% of all family medicine visits are related to oral health problems.[18]

One of the most commonly cited reasons for the low levels of physician participation in oral health care delivery is the lack of oral health competencies within physicians' education and training.[19–21] Over the past decade, leaders in family medicine education have worked to enhance oral health training resources and opportunities for medical students, family medicine residents, and community providers.[22–27] Smiles for Life, a national oral health curriculum for primary care providers developed by the Society of Teachers in Family Medicine, exemplifies the commitment that family medicine has made to educating non–dental professionals on oral health care and to improving primary care patients' oral health.

Physicians who have received oral health–related training are more likely to provide not only more comprehensive emergency care but also more appropriate and thorough counseling to their patients experiencing dental problems or to patients who may not have a regular source of dental care.[28] Not only must physicians receive appropriate education and training for oral health care, they must also understand the various roles primary care physicians play in oral health integration. The primary objective of this study was to evaluate several mod-

Table 1. Core Clinical Domains for the Integration of Oral Health and Primary Care Practice

Core Clinical Domain	Definition
Risk assessment	The identification of factors that affect oral health and overall health
Oral health evaluation	Integrating subjective and objective findings based on completion of a focused oral health history, risk assessment, and a clinical oral health screening
Preventive intervention	Recognition of options and strategies to address oral health needs identified by risk assessment and evaluation
Communication and education	Targets individuals and groups regarding the relationship between oral and systemic health, risk factors for oral health disorders, effect of nutrition on oral health, and preventive measures appropriate to mitigate risk at both the individual and population levels
Interprofessional collaborative practice	Shares responsibility and collaboration among health care professionals in the care of patients and populations with, or at risk of, oral disorders to ensure optimal health outcomes

els of health care delivery that have integrated oral health care services and primary care in order to inform family physicians of the various roles they can play within these emerging and innovative models of oral health integration.

Methods

Study Design

We conducted a comparative case study analysis in this qualitative study to evaluate the role of physicians in different models of oral health integration within federally qualified health centers (FQHCs). Through this approach, we are able to identify and analyze similarities, differences, and patterns across multiple organizations (in this case FQHCs) that share a common focus or goal.[29] In this particular circumstance, these FQHCs share a vision of integrating oral health care delivery into comprehensive primary care.

Study Participants

This study includes 5 health centers that have developed and successfully adopted strategies for integrating oral health care and primary care delivery. For the purpose of this study, health centers were considered to have successfully adopted strategies for integrating oral health care and primary care if they demonstrated implementation of each of the 5 core clinical domains outlined by HRSA (see Table 1). The health centers included in this study were identified by the National Association of Community Health Centers based on size, geographic location, and populations served.

Because no best practice exists for specific oral health integration delivery models within health centers, we selected 5 health centers that varied in their delivery models for integrating oral health care within their facilities. Furthermore, our goal was to select a sample of centers that were geographically distributed throughout multiple regions of the United States and that represented a range of organizational characteristics, including number of clinical sites, delivery of dental care services, total patients served, proportion of patients living at or below 200% of the federal poverty line, and cost per patient per year. By using this purposive sampling technique during site selection, we were able to ensure our sample is representative of the various delivery models and of the many differences in basic organizational characteristics. This allowed us to better examine the similarities and differences of the various cases and compare the role of physicians in oral health integration while also evaluating how variations in administrative and site characteristics contribute to the roles physicians play.

Administrative characteristics of health centers for 2014, including each center's number of clinical sites, the number of patients that it serves annually, and its cost per patient, were obtained from the HRSA. Descriptive data of administrative characteristics were generated for each organization to provide context and to enable cross-comparisons of administrative structures (Table 2). The technical appendix describes the model design and implementation of oral health integration for each of the selected health centers as it corresponds to the 5 domains for integration of oral health care and primary care defined by the HRSA in the Integration of Oral Health and Primary Care Practice.[12]

Study Data

Data on the role of physicians in oral health integration at FQHCs were obtained through semi-structured interviews with key informants conducted in the spring of 2015. We sought to understand fully the integration models within each health center from both the administrative and clinical perspectives. Therefore, key informants from each organization were selected based on their positions or their roles in the integration model. One administrator and 1 clinician were identified by the chief executive officer at each of the 5 health centers. These individuals were identified based on their in-depth knowledge of the integration model across all clinical sites within their respective organizations. Informants selected for the administrative perspective included chief executive officers and in some cases chief financial officers. For the clinical perspective, informants selected included medical directors, primary care physicians, dental directors, primary care and dental team members, and patients from each of the respective organizations.

Key informant tools were designed to gather qualitative information on the perceived strengths and challenges of each model and to identify strategic factors that contribute to success, such as the role of physicians within the integration model. Interview tools are provided in the Appendix. Interviews were 60 minutes long, performed by phone, and conducted by an experienced researcher

Table 2. Descriptive Characteristics of the Five Health Centers

	Bluegrass Community Health Center	Holyoke Health Center, Inc.	Salina Family Healthcare Center	Salud Family Health Centers	Yakima Valley Farm Worker's Clinic
Location	Midwest	Northeast	Midwest	West	Pacific Northwest
Sites (n)	2	6	1	10	18
Dental Services	No	Yes	Yes	Yes	Yes
Total patients served (n)	6,155	19,038	9,681	69,601	127,950
Patients living at or below 200% of the federal poverty line (%)	98.7	36*	85.7	92.7	93.1
Cost per patient per year ($)	695.04	2034.94†	943.54	810.75	1,026.12

Source: Health center data came from 2014 Health Center Profiles, which are publically available at http://bphc.hrsa.gov/uds/datacenter.aspx? q = d.

*The proportion of patients living at or below 200% of the federal poverty line reported in the Uniform Data System (UDS) for Holyoke Health Center, Inc., was 36% and seemed to be an outlier. As such, additional data were collected directly from Holyoke Health Center, which suggested that 96% of patients were living below 200% of the federal poverty line. For the purpose of consistency and to reduce biases between data sources, UDS data re reported in this table.

†Holyoke Health Center confirmed the high cost per patient per year was a result of the more comprehensive dental care it provides compared with other federally qualified health centers (FQHCs). Holyoke Health Center reported having on staff 1.5 full-time equivalents of an oral surgeon and providing endodontic and periodontal services not generally provided at other FQHCs.

(HLM) with a PhD in health policy and management, specific expertise in oral health integration, and direct knowledge of oral health care delivery from 9 years of working as a registered dental hygienist in health centers. All interviews were audio-recorded and transcribed.

Two researchers (CWN, HLM) with research expertise in health administration and dental care delivery conducted a thematic content analysis.[30] The researchers reviewed each interview transcript to determine the specific role of physicians in oral health integration. Transcripts were reviewed independently to identify the primary roles of physicians within these models of care before meeting to discuss any variations in results. The 2 reviewers' assessments showed 100% concordance.

Results

Describing the Organizations

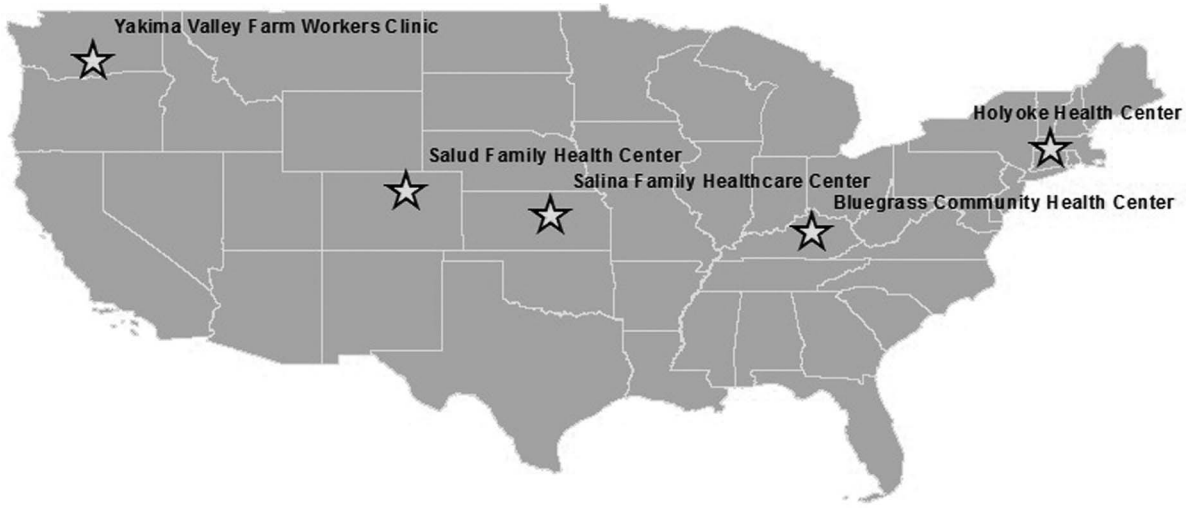
The health centers included in this study were distributed geographically across the United States: 1 was located in the Northeast, 2 in the Midwest, 1 in the West, and 1 in the Pacific Northwest (Figure 1).

Administrative characteristics of the health centers included in this study are presented in Table 2. The number of clinical sites and the availability of dental services varied. Specifically, the number of clinical sites operated by these health centers ranged from 1 at Salina Family Health care Center (Salina) to 18 at Yakima Valley Farm Workers Clinic (Yakima Valley). All the health centers provided dental services as part of their clinical operations, with the exception of Bluegrass Community Health Center (Bluegrass). The average number of patients seen annually ranged from 6,155 at Bluegrass to 127,950 at Yakima Valley, and the proportion of patients living at or below 200% of the federal poverty level ranged from 36.0% at Holyoke Health Center (Holyoke) to 98.7% at Bluegrass. The average cost per patient ranged from $695.04 at Bluegrass to $2,034.94 at Holyoke. Information regarding the structure and implementation of the oral health integration models within each of the five health centers are summarized in the Appendix.

The Role of Physicians

The roles of primary care physicians in the integration of oral health care and primary care varied within the 5 health centers included in this study. Roles were probably influenced by organizational factors, such as capacity and culture, and broader policy matters. In considering the role of physicians in each model, 3 distinct roles emerged: (1) the physician as a champion for oral health, (2) the physician as a collaborator with oral health colleagues, and (3) the physician as a member of an interprofessional team.

Figure 1. This map illustrates the geographic location of the five federally qualified health centers included in this study.



The model of integration at Bluegrass was developed and championed by the medical director, a family physician who recognizes caring for patients' oral health as a primary responsibility. An administrator at Bluegrass stated, "Dr. Steve Wrightson is a champion for [oral health integration]. If Steve was not here I do not know if it would have happened. People respect him." At Bluegrass, physicians are involved directly in providing oral health care, including risk assessments, clinical evaluations, preventive interventions (fluoride varnish), and targeted education for their patients. Bluegrass lacks a dental clinic and has no dental professionals on staff. To provide dental services for its patients, Bluegrass contracts with a dentist in the community to provide care to patients through a voucher program. Physicians' screenings of patients are particularly important because they enable physicians to provide the local dentist with an accurate picture of each patient's needs: "Dr. Wrightson performs examinations, discusses gingivitis, and administers fluoride varnish for his patients. Many of his patients have had negative experiences with dentists and do not have any continuity in care. Bluegrass has really helped [these patients] keep their oral health when they were experiencing barriers to dental care access. One patient even told Dr. Wrightson that he believes he would not have his teeth if it were not for [Dr. Wrightson]" (Bluegrass clinical care team).

Physicians were collaborators in oral health care at both Holyoke and Yakima Valley. At these organizations, physicians are involved in oral health care at a more peripheral level. As the leaders of primary care teams, they delegate certain services, such as fluoride varnish application, to team members, generally nurses and medical assistants, through standing orders. An administrator at Holyoke stated, "Primary care physicians have standing orders which empower their care teams to provide fluoride varnish to their patients during primary care visits. Our pediatricians and family medicine physicians also receive oral health training from Holyoke's dental residents."

Holyoke and Yakima Valley both have dental clinics that provide comprehensive dental services for patients. They have robust mechanisms for physicians to collaborate and coordinate patient care with their colleagues in the dental clinics, either through an interoperable electronic health record system or through a person designated as the "hub" for care coordination: "Medical and dental are housed in the same unit. Separate clinics, but they are colocated. Information is exchanged between medicine and dentistry on a routine basis. We use NextGen as our electronic medical record system, which integrates both medicine and dentistry. Physicians are able to indicate whether a child needs dental services and sends a message to a coordinator who schedules an appointment. This has resulted in 25 to 40 referrals per month" (Holyoke administrator).

As leaders of interprofessional care teams, physicians at Salina and Salud have a dental hygienist

practicing alongside them and providing oral health care for their patients, including risk assessments, oral health assessments, preventive interventions, and patient education. The administrator at Salina explained, "Our physicians are committed to providing oral health care for their patients and they have fully embraced dental hygienists as a part of their care team." By embedding on the primary care team a dental hygienist, a professional focused on dental disease prevention, oral health promotion, and chronic disease management, these 2 organizations are able to extend oral health care services to their patients effectively and efficiently. The presence of a dental hygienist in the primary care clinic increases awareness of oral health among the entire primary care team and the patients. The dental hygienist also serves as a liaison to the dental clinic and provides dental care coordination: "The medical and dental teams work closely together to serve our patients. They see a lot of complex patients and do ad hoc consults with each other as necessary. Our physicians partner with dental hygienists on a daily basis in patient care through an interdisciplinary model" (Salud clinical care team).

It is important to note that Kansas and Colorado, the respective states in which Salina and Salud are located, have provisions that allow dental hygienists to practice in the primary care setting and enable organizations to bill for services provided by a dental hygienist. The remaining organizations are located in states that do not have such provisions.

Additional Factors to Success

Training

Training is critical to preparing physicians to take on new and expanded roles in oral health care.[15] Three of the health centers offered training to their physicians and primary care staff. Bluegrass and Salina require their providers, residents, and staff to complete the Smiles for Life curriculum as part of the standard training provided at onboarding or, in some instances, on an annual basis. By embedding Smiles for Life into their standard training at onboarding, both organizations encourage new providers and staff to embrace oral health care as an integral part of primary care.

Holyoke provides oral health content during quarterly training sessions for its primary care providers and residents. In general, these trainings are developed and delivered by residents in the health center's pediatric dental residency program. These sessions provide primary care physicians with important information on oral health, and they foster and enhance interdisciplinary communication. Perhaps most important, these sessions promote a "shared responsibility" for oral health care among providers and model this concept for residents, who will carry it with them into practice after residency. In addition, Holyoke has partnered with the Massachusetts Department of Health to offer oral health training to primary care staff, which includes content specific to risk assessment and the application of fluoride varnish: "Primary care teams, including physicians, receive quarterly training and education on oral health from general and pediatric dental residents" (Holyoke administrator).

Organizational Culture

Organizational culture also contributed to physicians' role in integrating oral health care and primary care. Physicians and other team members at each organization embraced oral health care as part of total patient care and recognized shared responsibility for oral health care. This was especially true at Salud, where there was an "open door," literally and figuratively, between the primary care and dental clinics. At Salud, physicians and dentists reported working collaboratively on an ongoing basis in caring for patients. "Walking across the hall" to consult with one another regarding a patient is a frequent occurrence—and one that is highly valued by providers. In fact, medical and dental health care providers at Salud report high levels of satisfaction with the "culture of integration" and open communication: "We have a culture of openness between our physicians, dentist, and dental hygienists, which has been a key to successful integration of oral health within our organization" (Salud clinical care team).

Discussion

The US Surgeon General has deemed poor oral health a "silent epidemic,"[8] exemplified by the fact that preventable dental diseases are among the most common medical conditions in the United States.[8] One factor contributing to poor oral health in America is the historic separation of oral health care from the larger health care delivery system.[9] Although medical prevention guidelines currently advise medical practitioners to provide guidance

regarding oral health, as a result of the separation of medical and dental education physicians simply have never had the requisite training to provide oral health education or prevention to their patients. Furthermore, there has been a general lack of awareness of the various ways in which physicians can fulfill new roles that promote the integration of oral health within primary care settings. As such, primary care physicians have not been used to their full potential when it comes to bridging the gap between medical and dental care.

Physicians, especially primary care physicians, could have a profound impact on oral health in the United States by fulfilling expanded roles and integrating oral health within their practices. However, the expanded role(s) these providers are playing within these emerging models of oral health integration are not entirely clear because no single best practice currently exists for oral health integration within primary care. As such, health care organizations have been implementing new and innovative models of care that integrate oral health within their facilities. Many of these new models of care vary considerably across different health organizations; however, they typically share in common the 5 Interprofessional Oral Health Core Clinical domains outlined by HRSA. Because these models of care are so different across organizations, it is no surprise that physicians' roles vary greatly within these models of care.

A key finding of our study was that the role of primary care physicians can be generally categorized into 3 distinct roles: (1) the physician as a champion for oral health, (2) the physician as a collaborator with oral health colleagues, and (3) the physician as a member of an interprofessional team. However, regardless of the role physicians play at the 5 sites examined in this study, education and training were consistently highlighted as key components of successful oral health integration. Physicians have the potential to make significant contributions to the improvement of oral health in the United States by filling expanded roles in emerging models of oral health integration, but they require the appropriate education and training.

Despite discussion about medical school curriculum reform and active reform occurring at medical schools around the country, there remains a paucity of education in medical schools regarding oral health care. Major and common oral diseases are easily prevented and, if caught and treated early, are amenable to successful intervention and treatment. This notion is the foundation of preventive health. However, medical school curricula have generally not included topics on oral health prevention or treatment. Hence, physicians have traditionally had minimal to no direct involvement in oral health. Sadly, studies continue to show that physicians lack the knowledge to promote oral health in their patients. Integrating medical and dental knowledge is paramount, along with the reform of traditional medical school curricula and the creation of new such curricula. Furthermore, increasing awareness within the medical community of the various roles primary care physicians and primary care team members can play in these emerging models of care may promote participation from physicians in the improvement of oral health for all Americans.

Limitations

The primary limitation to this study is selection bias. Health centers were selected based on purposive sampling to create a sample of organizations with various models of oral health integration. The organizations were chosen to represent a range of characteristics such as geography, size, and dental delivery status. However, it was not the goal of this study to identify all oral health integration models. Therefore, this technical and comparative case study approach using purposive sampling was appropriate for exploring and classifying many of the roles primary care physicians are playing in oral health integration. Future research may take a more quantitative approach to survey the vast array of oral health integration models in order to get a broader perspective.

Furthermore, this study was conducted within only 5 states, and therefore may not be generalizable to physician's roles within other states that have different policies and regulatory environments. Because state policies and regulations may hinder actual adoption and implementation, future studies should focus on examining the feasibility of the implementation of these oral health innovations an on physicians' roles within these models of care.

Despite these limitations, our study findings present a stimulus for future research that can further define physician roles in oral health integration. More specifically, studies that evaluate the impact of state workforce policies on physician's

roles in oral health innovations may provide policymakers with important information necessary to make evidence-based policy decisions that may simulate oral health innovation across the United States.

Conclusion

Providing Americans with access to oral health care services is crucial in promoting their overall health. The Institute of Medicine has recognized that improving Americans' access to oral health care services demands that multidisciplinary health care teams be established in various settings across the health care system.[9] For these multidisciplinary health care teams to be successful, physicians—particularly family physicians—must have the requisite knowledge of oral health and the ability to assume the necessary roles within models that integrate oral health care and primary care. Regardless of whether physicians serve as champions for oral health, collaborate with oral health colleagues, or act as members of interprofessional teams, it is clear that they have a great deal to contribute both to the success of models that integrate oral health care and primary care and to improving oral health among their patients.

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To see this article online, please go to: http://jabfm.org/content/30/4/491.full.

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Appendix

Exploring Integration Models Using the IOHPCP Domains

Integration models are summarized in Table A.1. Each health center reported performing oral health **risk assessments** at the community and the individual patient levels. At the community level, these organizations reported analyzing aggregated patient information or reviewing secondary data on population health to identify needs and gaps in care and to target their integration models. All of the health centers identified pediatric patients as the primary target population for their integration models. Adult patients with chronic conditions and women in prenatal care also were identified as target populations by Bluegrass and Holyoke. The community level risk assessments performed by these organizations were generally performed by staff members involved in the administration of each health center.

At the individual patient level, oral health **risk assessments** were performed as a standard part of primary care appointments or outreach services at each organization. Risk assessment strategies included reviewing a patient's medical and social history and conducting a direct inquiry to identify risk factors. A primary care team member, typically a medical assistant, a nurse, or in the cases of Salina and Salud Family Health Center (Salud), a dental hygienist, was involved in gathering risk assessment information, which generally was incorporated into the physician's primary care examination. At Yakima Valley, oral health risk assessments also were incorporated into the Women, Infants, and Children program; staff members associated with this program completed oral health risk assessments for clients as part of the standard intake procedure.

Each health center included clinical oral assessments as part of its **oral health evaluation** strategy for primary care patients. The clinical assessment involved a visual examination of the hard and soft structures of the oral cavity. Dental hygienists performed these assessments at Salina and Salud, while physicians and other primary care team members performed these assessments at Bluegrass, Holyoke, and Yakima Valley. Clinical assessment and risk assessment findings were integrated in order to determine a patient's treatment and educational needs.[10]

All of the health centers provided **preventive interventions** and **patient education** as part of their oral health integration models. Each organization had provisions for fluoride varnish to be applied as a **preventive intervention** during primary care appointments for its target population. The application of fluoride varnish has been demonstrated as efficacious in reducing dental caries.[24] At the health centers included in this study, fluoride varnish was applied either by a physician, a dental hygienist, a nurse, or a medical assistant (under standing orders of a physician). Whether variations in the team member responsible for administering fluoride varnish are the result of state law, personal preference, or some other factor is unknown. In addition, each organization incorporated oral health into its targeted education for and standard messaging to patients. In general, targeted **patient education** was provided by a nurse, a medical assistant, or, in some cases, a dental hygienist but was further reinforced by the physicians as part of their patient examinations.

The methods by which and the extent to which these organizations' models included **interprofessional collaborative practice** varied. Interprofessional collaborative practice has been defined as "share[d] responsibility and collaboration among healthcare professionals in the care of patients and populations."[10] Both Salina and Salud adopted an interprofessional collaborative practice model in which dental hygienists are incorporated into the physician-led primary care team to provide oral healthcare and preventive dental services. By leveraging dental hygienists' expertise in dental disease prevention and oral health promotion, these organizations are able to extend oral healthcare services, including preventive dental services, and to offer dental care coordination to their patients. As a part of both the primary care and the dental teams, dental hygienists are able to coordinate appointments and to offer follow-up services for patients with dental treatment needs.

Information sharing was the foundation of interprofessional collaboration at Holyoke and Yakima Valley. Holyoke has an interoperable electronic health record system that facilitates information sharing between primary care and dental professionals. Leveraging technology provides its primary care and dental teams with the ability to communicate and collaborate in caring for patients and enhances coordination of health

Table A.1 Overview of Models and Implementation Strategies

	Bluegrass Community Health Center	Holyoke Health Center	Salina Family Healthcare Center	Salud Family Health Center	Yakima Valley Farm Workers Clinic
Model Type	*Physician Champion*	*Physician Collaborator*	*Physician-led Interprofessional Care Team*	*Physician-led Interprofessional Care Team*	*Physician Collaborator*
Target Population	Pediatric and chronic disease patients	Pediatric, veterans, HIV patients, etc.	Pediatric	Pediatric	Pediatric
Risk Assessment	Performed by: registered nurse or certified nurse assistant	Entered into HER by nurse, or medical assistant	Performed by: dental hygienist through EHR; "Inreach" connects primary care patients to oral health services	Performed by: dental hygienist	Performed by: EHR and Outreach and Primary Care Team Members
Oral Health Evaluation	Provided by: family physician	Performed by: nurses and medical assistants, family physician confirms or alters	Performed by: dental hygienist on a family physician-led care team	Performed by: dental hygienist on a family physician-led care team	Limited oral screening performed by family physician; Oral health assessment performed (generally same-day) by: dental assistant or dentist at dental clinic
Preventive Intervention	Fluoride varnish; Performed by: family physician	Fluoride varnish; Performed by: nurse or medical assistant, under a standing order of family physician	Fluoride varnish; Performed by: dental hygienist	Fluoride varnish; Performed by: dental hygienist	Fluoride varnish; Performed by: dentist or dental assistant at dental clinic
Communication and Education	Performed by: all care team members, led by family physician's commitment to oral health education	Performed by: nurse or medical assistant, reinforced by family physician	Performed by: dental hygienist, reinforced by family physician	Performed by: dental hygienist, reinforced by family physician	Performed by: WIC staff in WIC clinics, dental staff at dentist visits
Interprofessional Collaborative Practice	Family physician refers to community dentists for further dental treatment	EHR facilitates collaboration between medical/dental	Dental hygienists work as interprofessional care team members on a collaborative practice model under physician leadership	Open communication between medical and dental for consults and appointments	Dental Outreach Coordinator serves as hub to facilitate same-day dental appointments for patients whom the family physician has flagged as needing dental services
Strategic Factors	Family physician acts as "champion" for oral health integration in primary care	Family physician collaborates with care team to ensure patient receives referral to co-located dental clinic through EHR	Family physician leads an interprofessional care team to seamlessly integrate oral health into the primary care setting	A culture of oral health integration is created, as family physician has open-door policy for impromptu dental consults	A dental care coordinator and EHR are leveraged to facilitate interprofessional collaboration among medical and dental

Key Informant Tool: Matrix and Questions

Domain	Topic Area	Question	Perspective	Target Informant
Basic Administrative Information	Administrative	Please tell me about your organization (organizational type, number of clinical sites, primary geography, average number of patients, etc).	Administrative	Administrator
Model Design and Implementation	Education/Training	Please describe the education/training program(s) that are used by your organization.	Administrative	Administrator, Clinical Director, Care Team Members
	Education/Training	Why was this education/training program selected?	Administrative	Administrator, Clinical Director
	Education/Training	How well do you think the training program prepared you/ your team for implementation?	Administrative, clinical	Administrator, Clinical Director, Care Team Members
	Education/Training	Please describe any strengths or weakenesses in the education/training program.	Administrative, clinical	Administrator, Clinical Director, Care Team Members
	Resource Requirements	From the administrative perspective, please describe the resources (human and non-human) required to implement your current program.	Administrative	Admininstrator, Clinical Director
	Resource Requirements	Where these resources already available with your organization or where they acquired specifically for the purpose of integrating the model?	Administrative	Admininstrator, Clinical Director
	Financial mechanism	What mechanism(s) are used to finance the integration of oral health services into priamry care delivery at your organization?	Administrative	Admininstrator, Clinical Director
	Target population	What population does your model focus on reaching?	Administrative and clinical	Admininstrator, Clinical Director
	Target population	Why was this population selected?	Administrative and clinical	Admininstrator, Clinical Director
	Clinical services	Please describe the specific oral health services that are delivered as a part of the model.	Administrative, clinical, community	Admininstrator, Clinical Director, Care Team Members, Patients/Families
	Care Team Members	Which care team members are directly involved in the delivery of oral health services and what are their specific roles?	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Patient Selection	What protocols/strategies are used to identify patients?	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Clinical operations	Please describe the process(es) for delivery of oral health services in the primary care setting.	Administrative, clinical, community	Admininstrator, Clinical Director, Care Team Members, Patients/Families
Evaluation	Measures of Success	What measures are you using (or plan to use) to evaluate the success with your model?	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members

Continued

Domain	Topic Area	Question	Perspective	Target Informant
	Methods of Evaluation	What tools (clinical data, patient surveys, etc.) are you using to gather information to evaluate your program?	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Interaction	Please describe your interaction (who was the patient, what services were provided, and by whom) with the oral health integration program.	Community	Patient/Family
	Impact	How did this program impact your families ability to access to dental services?	Community	Patient/Family
	Satisfaction	How pleased are you with the oral health services you received?	Community	Patient/Family
Strategic Factors	Internal facilitators	Please describe the people, processes, or other resources within your organization or the health center which supported integration.	Administrative, clinical, community	Admininstrator, Clinical Director, Care Team Members, Patients/Families
	External facilitators	Please describe the people, processes, or other resources outside of your organization or the health center which supported integration.	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Internal barriers	Please describe the people, processes, or other resources within your organization or the health center which were a barrier to integration.	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	External barriers	Please describe the people, processes, or other resources outside of your organization or the health center which were a barrier to integration.	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Addressing barriers	Please describe how these barriers where overcome or addressed.	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Sustainability and Expansion	Please describe the plans, if any exist, for long term sustainability of the model within your organization.	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members
	Sustainability Factors	What factors, if any, will be required for or influence longterm sustainability of the model within your organization?	Administrative and clinical	Admininstrator, Clinical Director, Care Team Members

services. Yakima Valley has integrated oral healthcare with its primary care and outreach services, including its Women, Infants, and Children program and mobile health services, by engaging staff members in each setting and investing in a full-time dental care coordinator who serves as the "hub" for integration across the various clinics and programs. The person in this role serves as a resource for providers and patients and facilitates the sharing of information and coordination of care.