



Background Report
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The Need for Defining a Patient- Centered Dental Home Model in the Era of the Affordable Care Act

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Executive Summary

The changing landscape of health care coverage and delivery has been influenced and accelerated by the Affordable Care Act (ACA). Initially, the emphasis of the ACA was on access to care with the expansion of public and private insurance coverage options. Gradually, the priorities shifted toward delivery system changes, influenced by value-based payment models and the associated need for more coordinated, population-based care.

Similarly in dentistry, the first efforts under the ACA were devoted to improving financial access to dental care by expanding public and private dental insurance. More recently, increased emphasis has been placed on improving dentistry's integration into the overall health care delivery system. This highlighted the need for a model demonstrating 1) how dental care should be provided in a coordinated manner within a given practice setting, and 2) how oral health can be integrated into broader health home models. In dentistry, the concept of a dental home has primarily been focused on access to dental care for young children, and there is no standardized definition for the concept or how it should be evaluated. This elucidated the need to both broaden the concept to include populations of all ages, as well as to identify a definition and measurement method that is consistent across all organizations. We propose the patient-centered dental home (PCDH) as a model for providing coordinated, patient-centered dental care that can be integrated with broader health home models.

To help understand and prepare for changes in the delivery system for dentistry, this report provides background information describing how the patient-centered medical home (PCMH) model developed, how the ACA accelerated PCMH initiatives, and the intersection between ACA-related changes and opportunities to develop the PCDH model.

The PCMH model of care has been evolving for over 50 years

The medical home model of providing coordinated primary care has been evolving since the 1960s. The scope of services covered by this definition of primary care includes treatment of acute and chronic conditions, preventive care, and the coordination of referrals. While first introduced by the American Academy of Pediatrics to describe the desired type of coordinated primary care, especially for children with special health care needs, the PCMH has been adopted by physicians and accrediting organizations such as the National Committee for Quality Assurance (NCQA) as the desirable model for the delivery of primary care for all populations.

The key characteristics of care provided in a PCMH is integrated care that is comprehensive, coordinated, and accessible, patient/family-centered, and focused on quality and safety. Within this framework, the medical home acts as the major source of primary care services while coordinating additional services with other providers.

The ACA has encouraged changes in medical care delivery systems and financing

A number of provisions in the ACA promote changes in the delivery of medical care to create a system in which the goal is to improve patient and population health. Methods for doing so include increasing the number of people with

health insurance coverage, as well as changing the delivery system in a way that rewards value instead of the volume of services provided.

The ACA seeks to strengthen the primary care system, in part by rewarding organizations, providers, and patients for improvements in primary care coordination, provision, and participation. Newer care delivery models that emphasize coordination and patient-centered care include Accountable Care Organizations (ACOs), where payment may be tied to improved outcomes for the care of a population. Patient-centered medical homes (PCMHs) are often the primary care component for an ACO.

The expansion of health information technology and the development of Health Information Networks (HINs) create the opportunity to share information and coordinate care across providers as never before. In some areas, improvements in communicating patient information have led to the development of community health teams that can coordinate care across multiple providers and payers.

In addition to delivery system changes, ACA implementation is also increasing health insurance coverage through Medicaid expansion and the establishment of health insurance marketplaces. An estimated 14 million people have gained health insurance coverage as a result of this expansion. Because the expansion is coinciding with delivery system changes, many newly covered members of health plans are receiving care in an ACO or other type of coordinated delivery system and may not even be aware of it.

More development of the dental home model of care is needed

The dental home concept was introduced by the American Academy of Pediatric Dentistry in the early 2000s and has since been adapted and re-defined by various programs and organizations. The dental home concept has not evolved to the extent of the PCMH and is unfamiliar to most primary care dentists. Currently, there is no standard definition for a dental home, nor how to measure associated outcomes. Most programs and studies have focused on improving access to care for young children. However, many individuals who will gain insurance coverage through the ACA's Medicaid expansions are likely to be low-income adults with suboptimal access and utilization of dental services. The lack of a standardized definition and measurement approach is particularly problematic when studies attempt to evaluate the effectiveness of a dental home. Many studies that have examined the dental home concept have used either utilization of services or having a regular source of care as benchmarks, but these are much narrower constructs than those established for the PCMH.

Opportunities exist to incorporate dental care into overall health care

A number of organizations have initiated early efforts to integrate dentistry into a holistic health home model of care. This integration can take many forms, from facilitated referrals between medical and dental providers to full integration, in which providers are co-located and share infrastructure and EHRs.

Dental inclusion into ACOs is a particular example of where medical-dental integration could occur in the post-ACA health care environment. While most ACOs do not currently include a dental component, some have included dental care, often with the main intent to reduce emergency room use for dental problems.¹ ACO inclusion would provide dentistry the opportunity to collaborate

with a diverse array of health professionals and holistically improve patient health.

Dental integration with PCMHs is another promising area and can facilitate the development of health homes. Improvements in medical-dental integration are crucial in order to improve the delivery of dental care and overall patient health. However, there are no simple solutions and great effort and momentum would be required to change the current model of dental care delivery into a more integrated system.

The patient-centered dental home model creates an opportunity for dentistry to evolve with the health care system

Significant barriers to medical-dental care system integration impact the amount of effort and momentum necessary to change how dental care is delivered within a holistic health home model. The findings outlined above set the stage for changes in the dental care delivery system that keep pace with innovations in patient-centered medical care and health home models that include dentistry.

We propose the development of a standardized definition for the PCDH. In this model, care would be provided with an approach that is comprehensive, coordinated, accessible, and patient/family-centered, with a focus on quality and safety. In addition to focusing on improving patient-centered dental care delivery, this model would enable dental practices and practice networks to integrate with other entities such as ACOs, Medicaid health homes, community health teams, and PCMHs to create overall health homes that include provisions for oral health.

The information in this report is thus being used to develop: 1) a definition of the PCDH; 2) the characteristics of this model of care, and; 3) quality assessment measures and possibly accreditation standards for the future. This project is supported by a grant from the DentaQuest Foundation.

Acronym Reference

AAP	American Association of Pediatrics
AAAHC	Accreditation Association for Ambulatory Health Care
ACA	Affordable Care Act
ACO	Accountable Care Organization
ADA	American Dental Association
AHRQ	Agency for Healthcare Research and Quality
ED	Emergency Department
EDR	Electronic Dental Record
EHR	Electronic Health Record
HIN	Health Information Network
HRSA	Health Resources and Services Administration
IPE	Interprofessional Education
PCDH	Patient-Centered Dental Home
PCMH	Patient-Centered Medical Home
NCQA	National Committee for Quality Assurance
NIIOH	National Interprofessional Initiative on Oral Health
QHP	Qualified Health Plan
URAC	Utilization Review Accreditation Commission

Introduction

The Affordable Care Act (ACA) has advanced momentum toward a health care system that is more integrated, coordinated, and oriented toward health improvement. Health home models of care have become more prevalent, connecting the primary care medical home with a broader set of practitioners and services in the community to benefit both children and families. Further, the ACA has encouraged population-based care by emphasizing major changes in health insurance and health care delivery systems. These changes create opportunities for integrating dentistry into these systems, ultimately contributing to reduced costs and improved health outcomes.

Along with these ACA-related changes, evidence continues to support a relationship between oral health and a number of physical, mental and social health conditions. Oral health has been found to be associated with diabetes, pre-term birth, employment, school absences, and depression, to name a few.^{2,3} These associations, combined with a rapidly changing health delivery system, present an ideal opportunity to integrate dentistry into other primary care activities.

In this report, we describe existing medical home and dental home models and ACA-related changes and consider options for integrating dental and other health services. We also propose a new concept, the **patient-centered dental home (PCDH)**, and identify methods for integrating oral health care toward the goal of overall patient health.

Medical Homes

The medical home model of care has served as a foundation for the ACA to build upon. Both its history and some recent developments are summarized in this section to provide context and comparison for the dental home concept as it develops.

History and Definition of the Medical Home Concept

The emphasis on medical homes as a key feature of modern primary care has slowly evolved since the 1960s (**Table 2**). The Institute of Medicine has defined **primary care** as: *“the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community”*.⁴

The scope of services covered by this definition of primary care includes treatment of acute and chronic conditions, preventive care, and the coordination of referrals. The key characteristics of primary care, according to this definition, is integrated care that is (1) comprehensive, (2) coordinated, (3) continuous, and (4) accessible.⁴ Within this framework, the medical home acts as the major source of primary care services while coordinating additional services with other providers.

In the 1960s, the American Academy of Pediatrics (AAP) described the need for a primary care medical home to coordinate care for children with special health care needs in order to facilitate sharing of health information.⁵ The AAP stated that care in a medical home should be “continuous, comprehensive, family centered, coordinated, and compassionate”.⁵ Over time, AAP’s concept of a medical home has developed to define specific services and characteristics that a medical home provides.⁶ Specific characteristics include centralized recordkeeping, 24-hour availability, and coordination of specialized services through the central medical home.

As the medical home concept has evolved from being applied solely to children

with special health care needs to a large sector of the health care system, its definition has also had many versions and interpretations. A systematic review identified varying definitions from 13 professional organizations, 3 governmental bodies, and 13 unique research articles.⁷ Definitions varied according to the following dimensions: access, coordinated care, continuity of care, community linkages, information system support, payment, patient-centered care, provider type, quality, scope of care, and active care management. How the definition is applied is important, whether from a certification, payment, or scope of practice perspective.

Table 2. History of the Medical Home Concept in the U.S.

Year	Event
1967	American Academy of Pediatrics (AAP) first introduces the term " medical home " ¹
1977	AAP publishes first description of the medical home concept for children with special care needs ¹
1978	Alma Ata Declaration by WHO supports the importance of primary care in promoting overall health ²
1984	Medical home concept is implemented in Hawaii through the Hawaii Healthy Start Home Visiting Program ¹
1985	The medical home concept is integrated into the Hawaii Emergency Medical Services for Children Program ¹
1989	First AAP conference on medical home held to promote the medical home concept ¹
1992	AAP publishes policy statement defining medical home: ¹ <i>"The AAP believes that the medical care of infants, children, and adolescents ideally should be accessible, continuous, comprehensive, family centered, coordinated, and compassionate."</i>
1993	AAP establishes Division of Community Pediatrics to provide medical home training and support for the Community Access to Child Health (CATCH) program ¹
1994-1999	AAP's Division of Community Pediatrics implements the Medical Home Training Project with support from MCHB ¹
1996	Institute of Medicine (IOM) describes underlying principles of primary care, including care coordination similar to the medical home model in pediatric care ³
1996	Chronic care model is introduced by Dr. Ed Wagner to aid in the development of the patient centered medical home concept ²
2002	AAP provides operational definitions for 37 specific activities provided by a medical home ¹
2004	American Academy of Family Practice (AAFP) calls for a "personal medical home for each patient" in the Future of Family Medicine project ²
2006	American College of Physicians (ACP) supports the AAFP position on medical home
2006	Patient-Centered Primary Care Collaborative (PCPCC) is formed ²
2007	Four organizations (AAFP, AAP, ACP & AOA) develop the 7 Joint Principles of PCMH ²
2008	National Committee for Quality Assurance (NCQA) releases the first iteration of PCMH recognition standards (updated in 2011 and 2014) ^{2,4}
2009	Accreditation Association for Ambulatory Health Care (AAAHC) releases Medical Home accreditation standards (updated in 2013) ⁵
2010	ACP releases a position paper on PCMH Neighbors (PCMH-N) describing roles for specialists to interact with PCMHs ⁶
2011	Joint Commission releases its first Primary Care Medical Home designation standards (updated in 2013 and 2014) ⁴
2011	URAC (formerly the Utilization Review Accreditation Commission) announces its PCMH practice recognition program (standards updated in 2013) ⁷

- 1 Sia C, Tonniges TF, Osterhus E, Taba S. History of the medical home concept. Pediatrics. 2004;113(5):1473–1478.
- 2 Arend J, Tsang-Quinn J, Levine C, Thomas D. The patient-centered medical home: history, components, and review of the evidence. Mt Sinai J Med. 2012;79:433–450.
- 3 Institute of Medicine. Primary Care: America's Health in a New Era. Washington, DC: The National Academies Press, 1996.
- 4 National Center for Quality Assurance. Standards and Guidelines for NCQA's Patient-Centered Medical Home (PCMH) 2014. NCQA. Washington, DC. 2014.
- 5 Burton RA, Devers KJ, Berenson RA. Patient-Centered Medical Home Recognition Tools: A Comparison of Ten Surveys' Content and Operational Details. The Urban Institute, Health Policy Center. Washington, DC. March 2012.
- 6 American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians, American Osteopathic Association. Joint Principles of the Patient-Centered Medical Home. March 2007.
- 7 Gans DN. A Comparison of the National Patient-Centered Medical Home Accreditation and Recognition Programs. Medical Group Management Association. Englewood, CO. 2014.

Patient-Centered Medical Homes

The concept of a medical home has continued to evolve in recent decades. Initially conceived of as a centralized source of records for children with special health care needs, the patient-centered medical home (PCMH) approach to providing primary care was endorsed by several organizations, including the American College of Physicians and the American Academy of Family Physicians, in 2007.⁸ This endorsement – the Joint Principles of the PCMH – defines a PCMH as “an approach to providing comprehensive primary care for children, youth, and adults ... [and] is a health care setting that facilitates partnerships between individual patients, and their personal physicians, and when appropriate, the patient’s family.”⁸ This endorsement also identifies the hallmarks of a PCMH, which include an ongoing relationship with a personal physician who provides and coordinates all health care at all stages of life. These Joint Principles also recommended a payment structure that would reflect the value of additional services performed beyond face-to-face visits.

Since the Joint Principles were endorsed in 2007, the PCMH concept and application have evolved to include entire healthcare provider teams. The Patient-Centered Primary Care Collaborative, a leading coalition in the PCMH movement, promotes the Agency for Healthcare Research and Quality (AHRQ) definition of a medical home as a “model or philosophy of primary care that is patient-centered, comprehensive, team-based, coordinated, accessible, and focused on quality and safety.”⁹ This model has led to innovative performance-based reimbursement programs, including care coordination payments, a fee-for-service component, and a performance-based component.¹⁰

In order for practices or provider networks to qualify for these performance-based programs, they must demonstrate the extent to which their organization operates as a PCMH. Numerous organizations offer PCMH recognition/accreditation, but there are several key leaders in this arena. These include the National Committee for Quality Assurance (NCQA), the Accreditation Association for Ambulatory Health Care (AAAHC), the Joint Commission, and URAC (formerly the Utilization Review Accreditation Commission).¹¹ Each of these organizations defines their PCMH standards differently, and there is currently not a single set of evidence-based, well-accepted standards.¹ As a result, these organizations compete with one another in the PCMH recognition/accreditation market. As of May 2015, there were 10,098 sites – including 28,617 clinicians – recognized as PCMHs by NCQA¹², 456 organizations accredited as medical homes by AAAHC,¹³ and 140 organizations – including 1287 sites – certified as PCMHs by the Joint Commission.¹⁴ Information on the number of organizations accredited by URAC could not be found. Accredited organizations vary widely; some are private organization-based programs while others are on the public delivery side.

PCMHs have demonstrated net savings in total medical costs for enrolled patients.¹⁵ An evaluation of 17 state-based PCMH initiatives revealed a trend towards declining per capita costs for Medicaid patients, increased provider participation in the Medicaid program and improved patient and provider satisfaction.¹⁶ At least two additional positive outcomes have been reported with PCMH initiatives: a decreased use of emergency and hospital visits for non-emergency treatment needs^{15,17}, and high levels of satisfaction for PCMH providers and patients.¹⁷

Dentistry can learn from the evolution of the PCMH model and previous research on its effectiveness. The PCMH model, as well as its evaluation

1 For an in-depth comparison of these four organizations’ PCMH accreditation standards, see <http://www.medicalhomesummit.com/readings/A-Comparison-of-the-National-Patient-Centered-Medical-Home-Accreditation-and-Recognition-Programs.pdf>

standards, will inform our proposed parallel model and evaluation tool to be used in dentistry.

PCMH Neighbors

In 2010, the American College of Physicians (ACP) released a policy paper describing the roles of specialty and subspecialty medical practices in the PCMH model.¹⁸ This policy paper recognized the need for collaboration between primary care providers and specialists in order to achieve improved care coordination. Specialists and other clinicians face major barriers to participating in the medical home model, including: lack of reimbursement or other incentives for care coordination, lack of compatible information systems, and lack of a uniform electronic health record.¹⁹

PCMH Neighbors (PCMH-Ns) are specialty/subspecialty practices that can enter into care coordination agreements with PCMHs to facilitate referrals, information sharing, and co-management of a patient's disease. In a "Medical Neighborhood," patients, primary care physicians, and other clinicians would all have clearly articulated roles and responsibilities in contributing to health outcomes. The ACP recommends that these roles and responsibilities be defined by care coordination agreements between the PCMH and PCMH-N practices.¹⁸

Incentives for specialty/subspecialty practices to participate in the Medical Neighborhood include nonfinancial incentives, such as streamlining the referral process with primary care physicians, as well as the potential for increased patient referrals to the specialty/subspecialty practice.¹⁸ Financial incentives could potentially include enhanced payments or monthly care coordination fees.

Several states and communities have begun to support the Medical Neighborhood concept. For example, the Colorado Medical Society provides PCMH technical assistance, sample primary care-specialty care contracts, and educational resources for providers.²⁰ Additionally, Orlando Health, a not-for-profit health network, has obtained NCQA PCMH certification for network primary care physician offices and plans to contract with specialists, ambulatory surgery centers, and other affiliated providers to create a Medical Neighborhood that shares information and coordinated care.²¹

The National Committee for Quality Assurance (NCQA) offers recognition to specialty practices that successfully coordinate care with primary care physicians. The **Patient-Centered Specialty Practice (PCSP)** recognition program requires that practices track and coordinate referrals with other providers, provide timely access to appointments, track clinical and administrative data, track and coordinate lab and imaging services, and measure clinical outcomes to demonstrate improvement over time.²²

While we do not consider dentistry as appropriate for PCMH Neighbor status because most dental care is a component of primary care rather than specialty care, the PCMH Neighbor concept could be applied to the interactions between primary care dental providers (general and pediatric dentists) and other dental specialists.

ACA-Related Health Care System Changes

Delivery System Changes

A number of provisions in the ACA enhance how health care is provided for



both individual patients and entire patient populations. To improve individual patient care, the ACA has funded models that enhance care coordination and support patients in self-management, including models of community health teams, health homes, and ACOs. In addition, the ACA has also changed the delivery system so that it rewards value instead of the volume of services provided, and increased financial access to care by increasing the number of people with health insurance coverage. These changes have made possible progress toward achieving what is now commonly called the **Triple Aim**: improving health outcomes, reducing cost, and improving quality and patient experience.²³ In this section we discuss specific aspects of the ACA that inform the basis for integrating dentistry within a broader health home.

Accountable Care Organizations

Changes in the delivery of health care are creating a system in which the goal, from both philosophical and financial perspectives, is to improve patient and population health. Whereas in the current fee-for-service system the incentive to provide more services is financial, new models for care provision place the incentive on improving health outcomes, thereby often providing fewer services.

One organizational model that exemplifies changes in health care delivery and financing is the ACO model. The ACA facilitated the creation of ACOs, which are **health care organizations that share the financial risk and care coordination for a large group of patients**. In ACOs, financial reimbursement is based on improved health outcomes rather than the volume of completed procedures. ACOs began in the Medicare program specifically to serve elderly patients with multiple chronic illnesses, but they have since expanded into Medicaid and the private insurance market. From 2012-2014, the number of ACOs increased from 227 to 600, and in 2014 there were 18 million patients covered in an ACO.^{24,25}

ACOs are centered on primary care; they are paid based on the number of people who received the preponderance of their primary care by providers within the ACO. One major change with health care delivery in an ACO is how people with multiple chronic illnesses (i.e. high-cost, high-utilizers) are managed. In such cases, ACOs will be incentivized to connect this population to various health care providers who help manage their disease, including health coaches, behavioral health specialists, primary care physicians, and others. This diversity of providers under one umbrella, and the care coordination that is needed to keep track of all services received from all providers, demonstrate how ACOs act as an overall health home.

Of additional concern to the dental profession is the incentive to keep patients out of the emergency department. Emergency department visits for preventable dental conditions are responsible for approximately \$1 billion per year in costs, so the integration of dentistry with ACOs could result in considerable cost savings.²⁶ Progress on the integration of dentistry into ACOs is discussed in the Medical-Dental Integration section of this document (p. 21).

Health Information Technology

ACO development also involves data-driven care. By reviewing utilization data, ACOs can identify high-cost, high-risk patients. Once identified, ACO providers engage patients on health improvement activities instead of waiting until the patient seeks care. Identifying these high-cost patients and keeping them healthy is a key factor in reducing costs and increasing revenue for ACOs, and it can only be done through developments in health information technology.

In order to improve health information sharing between providers, the ACA facilitated the establishment of **health information networks (HINs)**, including both state- and national-level networks. The eHealth Exchange is a secure,

national, electronic health information exchange formerly known as the Nationwide Health Information Network.²⁷ It initially included several federal agencies but has now expanded to include the private sector.²⁸ However, as of 2014 infrastructure did not exist within this exchange to directly access patient electronic dental records (EDRs) across organizations.²⁹ Any dental record information could only be shared via direct provider-to-provider messaging.

Some individual states have also created their own HINs. Iowa's HIN is being utilized at 520 sites across the state.³⁰ However, similar to the national eHealth exchange, it does not support the direct access of EDRs across organizations.³¹ Additionally, very few dental providers or organizations have signed up to participate in the national or state systems.^{32,33}

The lack of infrastructure and participation for EDR-sharing in HINs also stems from the general lack of integration of EDRs within electronic health records (EHRs). EDR and EHR use and design have developed independently of one another; preliminary attempts to integrate them are underway.³⁴ At this time, three large governmental health care systems contain integrated medical-dental records: the U.S. Armed Forces, the Indian Health Service, and the Veterans Health Administration.³⁵ However, integration is rare in the private sector.

A 2007 national survey of dentists in private practice found that only 61% of dentists submitted claims electronically, and only 44% of dentists worked with electronic patient records in their primary practice.³⁶ These issues – low rates of electronic recordkeeping in dentistry, low dentist participation in HINs, inability to directly access EDR content in HINs, and the general lack of integration of medical and dental records – represent substantial challenges to the integration of medicine and dentistry.

Community Health Teams

Many small and medium-sized medical practices may not have the infrastructure or resources to coordinate care for high-risk, medically complex patients, particularly those who are also from lower socioeconomic groups. In response to these challenges, the ACA included funding for state Medicaid programs to develop **community health teams** (also sometimes called “community care teams”). As of 2012, eight states had implemented these teams to varying degrees.³⁷ Teams are locally based and include professionals from health and social sectors (e.g. nurses, pharmacists, dietitians, behavioral health specialists, social workers). Their purpose is to **provide care coordination and self-management support for medically complex Medicaid enrollees who seek care in resource-limited small and medium sized medical practices.**³⁷ Community health teams use repeated in-person contact in order to help these high-risk patients coordinate care, medications, and self-management. In addition to care management, teams also connect patients to needed community-based resources. As an incentive, primary care practices that collaborate with these teams receive enhanced reimbursement from Medicaid.³⁷ Early data from North Carolina indicate a cost savings benefit; however, more rigorous evaluation is needed to determine the effectiveness of this model.³⁷

Community health teams engage with the PCMH model to help small and medium-sized primary care practices attain PCMH recognition. These practices are often limited in their ability to attain PCMH recognition on their own due to limited resources; community health teams help to mitigate that barrier. Similarly, dental practices could conceivably utilize community health teams to help coordinate patient care across providers and provide self-management support. Community health teams present one resource for integrating dentistry with other components of the changing health care system.

Health Homes

The ACA contains a key provision that gives states the option to create **health homes** for Medicaid enrollees with chronic conditions. This model emulates the following aspects of PCMHs and community health teams: 1) health homes are made up of **teams of primary health, behavioral, and social care providers who offer a wide scope of coordinated care**, 2) as an incentive to participate, providers receive increased reimbursement from Medicaid, and 3) care coordination and linkage to community resources are key components.³⁸ The difference between health homes and PCMHs is health homes **target Medicaid-enrolled patients with at least two chronic conditions and/or a serious mental illness**. In addition, health homes require the use of health information technology to coordinate services. As of 2014, 15 states had received federal approval for their Medicaid health home programs, including over one million program enrollees.³⁹

Insurance Expansion

The ACA is increasing health insurance coverage through three major reforms to the insurance industry: **Medicaid expansion** for low-income adults; the establishment of **health insurance marketplaces**; and the implementation of new **minimum standards for health care plans**.⁴⁰

While the ACA established the federal standards for these reforms, responsibility for implementation and enforcement falls primarily to states. As of April 2015, 30 states have moved forward on expanding their Medicaid programs.⁴¹

While the vast majority of dental insurance plans in the health insurance marketplaces are stand-alone dental plans, a small proportion are either embedded within a qualified health plan (QHP), or bundled together with medical coverage.⁴² QHPs are insurance products that satisfy federal regulations for coverage and cost sharing. These embedded QHPs apply only to children, as the ACA mandates that pediatric dental coverage be offered to children but there is no mandate for adult dental coverage. However, QHPs do not have to include pediatric coverage if there is at least one stand-alone pediatric dental plan available on the health insurance marketplace. Across all states that have either a federally-facilitated or partnership health insurance marketplace, 34 percent of the qualified health plans (QHPs) include pediatric dental benefits as of 2014.⁴²

The American Dental Association (ADA) estimates that 8.7 million children and 17.7 million adults will gain some form of dental benefit by 2018 through implementation of the ACA.⁴³ Increases in the number of adults receiving dental benefits are due primarily to Medicaid expansion. However, because many states limit the scope of dental coverage for their Medicaid enrollees to only emergency or other limited services, only 4.5 million adults are expected to gain access to *comprehensive* dental coverage. Overall, dental expenditures in the U.S. are expected to rise by \$4 billion due to increased Medicaid spending and private dental benefits.⁴³

Increased Medicaid enrollment is expected to result in an additional 10.4 million dental visits annually by the year 2018.⁴⁴ This will likely increase demand for services, thereby necessitating changes in the U.S. dentist supply. Public and private dental safety nets will be necessary to increase service capacity and ensure access to care for the newly insured.

Dental Homes

Whereas the medical home concept had decades to slowly evolve, the pace

of dental home concept development has been extremely rapid. This section outlines the historical development of the concept and definitions, how it has been applied and implemented, and the limitations of the dental home concept as it currently operates.

History and Definitions of the Dental Home Concept

The dental home concept began in the early 2000s with the goal to connect children to dentists at an early age (**Table 3**). Characteristics of this early dental home concept were (1) “a philosophy embraced by the dental practice” as opposed to a physical location, (2) a team that cares for patients starting in early childhood and following them through life, and (3) a focus on prevention and risk assessment.⁴⁵ The standard characteristics of a medical home were applied to the dental home as well: accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally competent.

This concept has since been adapted and re-defined by various programs and organizations. However, the following **elements of dental home definitions** are relatively consistent:

- Ongoing relationship between dentist and patient
- Family-centered
- Sharing many standard characteristics of a medical home (e.g. comprehensive, continuous, coordinated)

In each of their definitions of a dental home, the American Academy of Pediatric Dentistry, the Head Start program, and the Association of State and Territorial Dental Directors identify specific services that should be provided within a dental home, including risk assessment, individualized prevention, anticipatory guidance, and dietary counseling.^{6,46,47}

Whereas most dental home definitions typically center around the dentist-patient relationship, dental home definitions for the Iowa Department of Public Health and the Pacific Center for Special Care at the University of the Pacific include non-dentist providers.^{48,49} Specifically, they include specially trained auxiliary dental hygienists or assistants as part of the dental home team.

The Health Resources and Services Administration’s (HRSA) Maternal and Child Health Bureau hosted an expert meeting in 2008 to address the lack of an accepted definition of the dental home.⁵⁰ They concluded that there are four **key components of a dental home**:

- Access to care
- Quality of care
- Coordination of care
- Provision of preventive care, including risk assessment

They also concluded that the dental home concept should reflect a team approach that includes dental hygienists, primary care health professionals, community-based health providers, and families.

In discussing what model structure best encompasses these attributes, the group suggested a two-tiered model. This model combines (1) a vertical model in which the most complicated care is provided by a dentist and the dental hygienist provides less complicated care, and (2) a dispersion model in which “the entire community serves as the dental home, and community resources are integrated to serve the population’s oral health needs,” such as school-based sealant programs and nurse-provided caries risk assessments.⁵⁰ This two-tiered

model is reminiscent of the community health care team-PCMH partnerships in medicine.

As is the case with medical homes, there continues to be a wide variety of dental home definitions, both in policy and in the scientific literature, and the Maternal and Child Health Bureau meeting’s call for an evidence-based definition is still relevant.

Table 3. History of the Dental Home Concept in the U.S.

Year	Event
2001	Policy on the Dental Home adopted by American Academy of Pediatric Dentistry (AAPD) (reaffirmed in 2010) ⁸ <i>“The Dental Home is the ongoing relationship between the dentist and the patient, inclusive of all aspects of oral health care delivered in a comprehensive, continuously accessible, coordinated, and family centered way.”</i>
2002	Characteristics of a dental home are described by Nowak and Casamassimo ⁹
2003	American Association of Pediatrics (AAP) publishes policy statement calling for establishment of a dental home by age 1 ¹⁰
2006	American Dental Association (ADA) provides support for the dental home concept by <i>“inclusion of the establishment of the dental home by age 1 year in the policies of the ADA”</i> ¹⁵
2006	I-Smile program initiated by Iowa Department of Public Health to provide coordination of dental services for low-income children ¹¹
2006	AAP supports the AAPD definition of a dental home, calls for establishment of a dental home by age 1 and calls for collaborative relationships between dentists and pediatricians ⁵
2008	HRSA’s Maternal and Child Health Bureau convenes a meeting with experts from federal, national, state, and local leaders to explore the dental home concept ¹²
2012	Association of State and Territorial Dental Directors (ASTDD) recommends establishment of a dental home by age 1 ¹³
2012	Virtual dental home model is described as an alternative method of providing community-based dental care ¹⁴

Current Dental Home Initiatives

Recently, there has been a proliferation of dental programs aiming to improve access to a dental home for various underserved populations. Appendix 1 lists specific examples of such programs. While the methods and target populations vary across these initiatives, their common goal is generally to improve access to a regular source of dental care. Other common aspects of current dental home definitions – an ongoing relationship between provider and patient, and having many of the classic characteristics of the medical home such as family-centered, comprehensive, continuous, and coordinated – are generally not addressed or measured.

Similarly, there is considerable variation in whether, and how, programs provide essential dental home services. The structure of the dental home also varies widely across programs, can be clinic or community-based, and may be dentist-focused or include non-dentists as part of the dental home team. Therefore, although programs use the common term “dental home,” there is no standardization of what that term represents.

8 American Academy of Pediatric Dentistry. Policy on the dental home. *Pediatr. Dent.* 30, 22–3 (2012).

9 Nowak AJ, Casamassimo PS. The dental home: a primary care oral health concept. *J Am Dent Assoc* 2002; 133(1): 93–98.

10 American Academy of Pediatrics. Policy statement: Oral health risk assessment timing and establishment of the dental home. *Pediatrics* 2003;111:1113-1116.

11 Rodgers T, Meister S, Russell B. Inside I-smile. Annual report on Iowa’s dental home initiative for children 2013. Iowa Department of Public Health.

12 National Maternal and Child Oral Health Resource Center. The dental home: Summary from an MCHB expert meeting (2008).

13 Association of State and Territorial Dental Directors (ASTDD). First Dental Visit by Age One (2012).

14 Glassman P, Harrington M, Mertz E, Namakian M. The virtual dental home: implications for policy and strategy. *CA Dent Assoc J.*2012;40(7):605–611.

Review of Dental Home Literature

The published literature on dental homes demonstrates similar variation in how the concept is defined and outcomes measured. **Table 4** includes studies that either state their intent to measure a dental home, or have an outcome measure that is comparable to other dental home studies.

This literature substantiates the finding that there is no standardized definition or outcomes measurement method for the dental home concept. In addition, the concept is centered primarily on de facto access to dental care rather than on the more detailed conceptual characteristics of a dental home, such as quality and care coordination. Very few studies have examined the effectiveness of the dental home concept in addressing barriers to oral health.

Table 4. Studies examining the dental home concept

Data Used/Study Populations	Dental Home Definition/Measure	Key Findings
Survey of racially/ethnically diverse adult population in Florida about dental home and trust ⁵¹	Having a regular dentist	Predictors of having a regular dentist after adjusting for known covariates: higher trust in the health care provider, being employed, racial/ethnic minority status, female gender, and higher educational attainment
Survey of diverse Latino adult population in Florida about dental home and social factors ⁵²	Having a regular dentist	Predictors of having a regular dentist after adjusting for known covariates: higher perceived social status, not speaking a language other than English at home, female gender, having dental insurance, and higher educational attainment
Medicaid claims analysis from South Carolina children under age 4 regarding dental utilization ⁵³	Whether child had visited the same dentist for any reason with no other dental claims from another provider in the study year and the year preceding it	Compared to urban white children, urban non-white children were more likely to have a dental home as defined in this study, and rural non-white and rural white children less likely
Survey of Ohio pediatric (PD) and general practice (GP) dentists about incorporation of dental home concept ⁵⁴	AAPD definition: 1) a relationship between a dentist and a patient, and 2) should begin no later than age one	Only 18 percent of GPs were familiar with the term “dental home” and only seven percent were able to identify the two primary characteristics of a dental home according to the AAPD definition. PDs were considerably more familiar with both the term (78%) and the components (59%) than GPs.
National survey of AAPD members about infant oral health care beliefs and practices ⁵⁵	First dental visit by age 1	91 percent of PDs agreed with the AAPD’s dental home policy, and 90 percent of PDs performed age one dental exams.
National survey of board-certified pediatric dentists about dental home characteristics ⁵⁶	Detailed measurement tool for assessing a dental home	75 percent of respondents were knowledgeable of the dental home concept
Survey of Connecticut pediatric and general dentists regarding age 1 dental visit ⁵⁷	First dental visit by age 1	All PDs who responded to the survey saw 0-2-year-old children, but only 42% of GPs did. Of those GPs who did not see children age 0-2, the top three reasons cited for not doing so were the following: children were too young to cooperate, they refer children that age to another dental provider, and they’re not adequately trained to see children age 0-2
Survey of Iowa general dentists regarding age 1 dental visit ⁵⁸	First dental visit by age 1	76% of GPs were familiar with the age 1 dental visit recommendation, whereas 66% actually accepted children age 0-2 into their practice

Measuring Characteristics of a Dental Home

Currently, there is no accepted, evidence-based tool to evaluate the extent to which a practice comprises a dental home. As is evident in the published literature, the concept of a dental home has been quantified by evaluating limited aspects of a dental home, including whether patients have a regular source of dental care or whether the dentist accepts patients for the age 1 dental visit. Slonkosky et al. made the first attempt to comprehensively measure what

it means to be a dental home, which was then adapted by Hammersmith et al.^{54,56} These two studies used similar surveys to assess the following: dentist and practice information, the seven dental home characteristics as outlined in Nowak and Casamassimo's foundational dental home concept (accessible, family-centered, continuous, comprehensive, coordinated, compassionate, and culturally competent), and dentists' familiarity with the concept itself. The Hammersmith et al. study measured 41 total dental home attributes that reflected these seven global dental home characteristics. To our knowledge, Slokonsky and Hammersmith's measurement tools have not been used to evaluate dental homes outside of these two studies.

These studies highlight the fact that the dental home concept was developed within the discipline of pediatric dentistry, and that much of the focus on developing and measuring this concept has been related to this discipline.

Another tool for evaluating characteristics of dental homes is available through the Accreditation Association for Ambulatory Health Care (AAAHC).⁵⁹ AAAHC has eight core standards: patient rights and responsibilities, governance, administration, quality of care provided, quality management and improvement, clinical records and health information, infection prevention and control of safety, facilities and environment. If an organization is interested in AAAHC medical or dental home accreditation, it must pass these eight core standards as well as additional elements to evaluate it as a medical/dental home.

AAAHC dental home accreditation includes five domains: relationship, continuity of care, comprehensiveness of care, accessibility, and quality. Currently, 98 sites across the United States have received AAAHC dental home accreditation.⁶⁰ Of these, 29 are community health centers, 25 are private dental practices (all but one from the same company), five are Indian Health Services clinics, 23 are U.S. Coast Guard facilities, one is an ambulatory surgery center, and 15 are classified as networks.

Limitations with Current Concept and Definitions

Existing dental home programs and published literature show that there is considerable variation in how the dental home concept is defined, administered, and measured. Most programs and studies focus on dental homes for young children, which is reflective of the specialty in which the concept began. However, as low-income adults and the elderly currently have poorer access to dental care than children in terms of insurance coverage and utilization, dental home model development and measurement should be expanded to include individuals across the lifespan. The lack of a standardized measurement tool is particularly problematic when studies attempt to evaluate the effectiveness of a dental home in the absence of a testable conceptual framework.

Medical-Dental Integration Activities

Recognizing the need to connect and coordinate medical and dental systems of care, several organizations have made progress in this area. Governmental, nonprofit, and professional organizations have each contributed pieces of the medical-dental integration puzzle; however, they have generally operated separately. In this section we describe the current work that is being done in medical-dental integration and how these initiatives intertwine.

Integration Approaches

Organizations have proposed and implemented numerous approaches to medical-dental care integration. One approach is to increase the provision of preventive oral health services by primary care clinicians. This has been a major

Existing dental home programs and published literature show that there is considerable variation in how the dental home concept is defined, administered, and measured.

focus of HRSA's Integrating Oral Health and Primary Care Practice (IOHPCP) initiative.⁶¹ Such efforts recognized that medical professionals are most often a child's first entry point into the health care system and are in a position to identify early signs of dental disease. This presents a first opportunity to offer anticipatory guidance about oral health as well as preventive treatments, such as fluoride varnish. In addition, primary care clinicians are well poised to expand their oral health clinical competency to improve oral health of vulnerable and underserved populations across the lifespan. The National Interprofessional Initiative on Oral Health (NIIOH) funded by DentaQuest Foundation, the Washington Dental Service Foundation, the Connecticut Health Foundation, and the Reach Healthcare Foundation, have resulted in the Smiles for Life Curriculum, which provides standardized oral health training to primary care clinicians. 62

Other approaches to integration involve how medical and dental systems interact with one another. The National Maternal and Child Oral Health Policy Center has theorized how an integrated health home could operate and has described **five potential models for medical-dental integration** which fall on a spectrum from high to low integration:⁶³

- 1) **Full integration** involves the dentist being a full member of an interprofessional group practice at a single location and working collaboratively with the health care team to provide comprehensive care. This model reflects the ideal approach to providing a full range of primary care by one coordinated team; however, examples of this model in action are rare.
- 2) The next model, **co-location**, involves both medical and dental providers under the same roof but operating separately with no coordinated health team. This model enhances communication between providers and facilitates "warm handoff," or a primary care provider directly introducing a patient to a referred specialist.⁶⁴ Co-located models have the advantage of requiring less systemic overhaul than full integration because they maintain their existing practice models but do so in a common location.
- 3) **Shared financing** is a payer model in which medical and dental providers share the financial risk and opportunity for a group of patients, which is similar to other risk-based models of care such as ACOs. Examples of ACOs that include dental services will be discussed below.
- 4) **Virtual integration** involves a common electronic health record (EHR) system that is visible to both medical and dental providers although they may not be co-located. The Veteran's Administration EHR system is an example of virtual integration. This model is particularly appropriate in geographically remote areas where physical co-location may not be feasible.
- 5) Finally, the least integrated model on this spectrum is **facilitated referral**, where referrals are formalized between providers to enhance tracking and follow-up.⁶³

Grantmakers in Health held a meeting of experts in 2012 to discuss medical-dental integration, and the result was a similar hierarchy of integrated models: full integration, colocation (including virtual partnerships), primary care provider service focus, and cooperation and collaboration.⁶⁴ These latter two models differ from the National Maternal and Child Oral Health Policy Center's hierarchy. **Primary care provider service focus** is an approach that focuses on primary care clinicians, such as physicians, physician assistants, or nurse practitioners, providing preventive dental services, as emphasized by HRSA's IOHPCP initiative. An example of this is North Carolina's *Into the Mouths of Babes* program in which medical providers deliver caries risk assessment, anticipatory guidance, fluoride varnish, and appropriate dental referrals for high-risk

Dental integration into ACOs presents a particular opportunity to reduce costs associated with emergency department (ED) use for preventable dental conditions.

children at well child visits that are reimbursed by Medicaid.⁶⁵ **Cooperation and collaboration** is synonymous with the National Maternal and Child Oral Health Policy Center's facilitated referral model. The Grantmakers in Health meeting participants note that "cooperation and/or collaboration" and "integration" are often used interchangeably, although cooperation/collaboration reflect separate systems of care that work together, whereas integration embeds oral health within primary care.⁶⁴

These integration approaches represent the spectrum of possible methods for connecting medical and dental systems given varied resources and barriers to doing so. They support the fact that there are differing levels of opportunity for integration depending on geographic location, populations served, clinic type (public vs. private), and other factors.

Features of Highly Integrated Systems

As part of their Oral Health Disparities Collaborative, HRSA conducted a pilot project in 2005-2007 with four health centers to integrate their medical and dental services.⁶⁶ From this project, HRSA developed a set of **characteristics that reflect highly integrated models**, including:

- Integrated health record and scheduling systems
- Integrated care team pods
- Open-access dental scheduling for children age 0-5 and pregnant women who are seen in the medical clinic
- Oral health preventive services integrated into medical visits
- Integrated staff meetings

These characteristics could guide health centers or other organizations that intend to integrate their medical and dental programs.

The National Network for Oral Health Access conducted a needs assessment of Health Center Dental Directors as part of a cooperative agreement with HRSA to identify promising methods of achieving high-level medical-dental integration within health centers.⁶⁷ The needs assessment and follow-up interviews with these early adopters of medical-dental integration identified seven common themes:

- 6) Health center executive leaders (i.e. Directors and CEOs) are the prime forces behind efforts to achieve integration.
- 7) The dental department is included in the executive/management team during planning and decision-making.
- 8) Co-location of medical and dental services allows for bi-directional referrals and consultations.
- 9) Health centers focus on outcomes and quality improvement.
- 10) Health centers develop staff buy-in by explaining rationale for changes, including improved patient outcomes.
- 11) Patient enabling services (e.g., patient navigators and health coaches) facilitate access and patient engagement.
- 12) Proactive dental directors are required to provide leadership and advocacy to the importance of oral health.

These early initiatives provide momentum, tools, and guidance for future integration endeavors to build upon.

Dental Integration into Medical and Health Home Models

Examples of dental integration into medical and health home models exist, although there are very few currently in operation. Dental integration into PCMHs is supported by HRSA's Advisory Committee on Training in Primary Care Medicine and Dentistry, which proposed the development and evaluation of the Patient-Centered Medical and Dental Home, a PCMH model that includes dentistry. They later revised it to be called the **Patient-Centered Health Home**.^{68,69} Only a few PCMHs nationwide have this type of integrated structure, and they generally have co-located medical and dental clinics. Examples include Community Health and Dental Care PCMH in Pennsylvania and International Community Health Services PCMH in Seattle.¹

The inclusion of dental care in ACO models is another example of existing medical-dental integration models. However, only a few examples exist.¹ One is Oregon's **Coordinated Care Organizations (CCOs)**, which demonstrate a shared financing system in which CCOs have a global Medicaid budget for all physical, mental, dental, and behavioral services for their Medicaid-enrolled patients.¹

Dental integration into ACOs presents a particular opportunity to reduce costs associated with emergency department (ED) use for preventable dental conditions. In 2010, ED visits for preventable dental conditions nationwide cost \$1 billion.²⁶ Generally, the care provided in EDs for dental conditions consists of treatment with antibiotic and pain medication and a dental referral, rather than treating the source of the problem.⁷⁰ In an ACO environment where reimbursement incentivizes reducing ED use, this problem presents a clear opportunity to save money by integrating EDs with the dental care system. Placing an urgent care dental clinic in the hospital has been shown to be one successful model for reducing dental ED visits, however this is not feasible in all hospitals or regions.⁷⁰ Another example is **Minnesota's Hennepin Health Program**, which is an ACO with an aim to reduce hospital admissions for dental emergencies by creating an ED diversion program that connects patients to local dentists.⁷¹

Integration in Training Programs

In order to prepare future medical and dental providers for a health care system in which they are expected to coordinate care for their patients across professions, training programs must adequately prepare their students to operate in such an environment.

The HRSA Advisory Committee on Training in Primary Care Medicine and Dentistry has taken the lead in this direction; they emphasize enhanced interprofessional education in medicine and dentistry in preparation for successfully operating in an integrated health care environment.⁷² HRSA's Integration of Oral Health and Primary Care Practice Initiative echoes the same, as they place a major focus on oral health training for primary care providers and trainees. The major components of this initiative are to develop oral health clinical competencies for primary care clinicians (e.g. nurse practitioners, nurse midwives, physicians, and physician assistants), and to implement those competencies in safety net settings through systems change. They recommend institutionalizing oral health competencies by incorporating them into accreditation standards for these health professional training programs.

These initiatives and recommendations are reflective of a broader movement in health care education. **Interprofessional education (IPE)** is a process by which "students from two or more health professions learn together during all or part of their professional training with the objective of cultivating collaborative

...structural differences in medical and dental care delivery present major hurdles to successful integration of the two systems.

practice to improve the quality of patient care at the individual and population level".⁷³ While dentistry was largely absent from early national discussions around IPE⁷⁴, the profession has since made it a major focus. It is also part of a national IPE Collaborative Expert Panel, which has guided new accreditation standards on integration in six health professions. The Commission on Dental Accreditation added two new IPE and team-based standards in July 2013.

A 2011 survey of dental school deans found that the most common types of joint activities with other health professions programs were volunteer activities (66%), clinical activities, (60%), and service-learning projects (52%). Fewer schools reported joint activities related to the integrated provision of health care, which include communication training (31%) and evaluation of health systems and delivery of care (10%). In a health care environment that is quickly moving toward collaborative health care provision, these activities will likely become increasingly important to incorporate into training programs.

Advantages and Barriers to Integration

Improvements in medical-dental integration are crucial in order to improve the delivery of dental care and overall patient health. However, the opportunities identified above are not simple solutions and a great amount of effort is needed. A number of advantages and barriers impact the ability to make such widespread changes.

Advantages for medical-dental integration include improvements at the patient-, provider-, and system-level:⁶⁴

- Improved effectiveness and efficiency in the primary care system for preventing disease
- Improved management of chronic disease
- Expanded entry points into the dental care system
- Likelihood of cost savings

A recent national study quantified the potential for cost savings via screening for chronic conditions in dental offices, and found that it could save the U.S. health care system up to \$65.3 million per year, or \$20.82 per person screened, after accounting for the labor costs to complete these screenings.⁷⁵

These advantages are mediated by a number of **barriers** that limit the movement toward integration of dental care with overall health care. Such barriers include:⁶⁴

- Traditional separation of medical and dental services
- Limitations of provider training and skills
- Separate insurance and financing systems
- Limited access to dental providers who accept publicly insured and other underserved groups
- Low public awareness about the importance of oral health
- Limited evidence on the effectiveness of medical-dental integration and demonstration project success

These barriers allude to a broader difficulty in integrating dentistry and medicine, which is the fact that the two systems operate very differently. First, the provider structure of the delivery systems are quite different, with ⁶⁹ percent of US private practice dentists operating in a solo practice⁷⁶ versus 18% of physicians doing so.⁷⁷ Further, 23% of physicians work for a practice that is partly owned by a hospital and 5.6% are direct hospital employees, whereas less than 1% of US dentists work as hospital staff.⁷⁸ Second, the insurance structures

for medical and dental care are necessarily different due to the chronic nature of oral disease. Unlike many medical conditions that are unpredictable and episodic in nature, the most common oral diseases are slowly progressive and widely prevalent; over 90% of adults have experienced tooth decay.⁷⁹ Therefore, financing mechanisms for medical care are primarily designed for high-cost, acute, infrequent problems just like homeowners or car insurance. However, dental insurance is typically designed as a prepayment plan, with a number of cost-sharing characteristics such as deductibles, copayments, and annual maximums.⁸⁰ These structural differences in medical and dental care delivery present major hurdles to successful integration of the two systems.

Another major limitation is that Medicare, the national health insurance program for adults over age 65, does not include any coverage for dental care. People in this age group, particularly those with multiple chronic illnesses, would benefit greatly from improved financial access to dental care; however, there are no ACA provisions to add dental insurance to Medicare.

The gravity of these barriers underscores the effort and momentum needed to change how dental care is delivered within a holistic health home model.

Future Directions

In this report, we have described ongoing initiatives to foster health homes as sources of coordinated care that emphasize overall patient health and quality improvement, as well as the dental home movement and its limitations. Several findings from this report indicate that the current health care environment is favorable for incorporating oral health into primary care.

First, recent changes in the health care system – including population-based, coordinated care that places value on improving outcomes and reducing cost – have, for the most part, not included dental care, despite oral health being an important component of overall health. This provides an opportunity for the dental profession to take the lead in applying successful strategies to improve the provision of dental care.

Second, current dental home initiatives have mainly focused on improving access to dental care for select populations. However, other aspects of the medical home movement – such as patient-centeredness, care coordination, and quality improvement – have not been a major focus in dental home programs up to this point. More development is needed on defining the dental home, determining how it should be evaluated, and identifying ways to connect it with other aspects of health care.

Third, entities such as PCMHs and ACOs may benefit from including a dental component, particularly from the perspective of reducing emergency department visits for preventable dental conditions. Expansion of these coordinated efforts to include oral health is crucial, particularly given increasing evidence for linkages between systemic and oral health.

Patient-Centered Dental Home

Current conditions set the stage for changes to the dental care delivery system that mirror innovations in patient-centered medical care, including integrated health home models that incorporate dentistry. We propose the development of a new dental home model, the **patient-centered dental home (PCDH)**, which synthesizes the dental home and PCMH models and serves as a source of comprehensive, coordinated, accessible, patient/family-centered care that is focused on quality and safety.

This PCDH model requires a standardized definition and associated standards. It should be applicable to various types of health care settings (e.g. private practice, community health center, virtual dental home, etc.) in order to function across both public and private sectors. In addition to enhancing the delivery of patient-centered dental care, this model would enable dental practices and practice networks to integrate with other entities such as ACOs, Medicaid health homes, community health teams, and PCMHs to create overall health homes that include oral health.

This review serves as a foundation for developing the PCDH model. Our next steps include gathering extensive, structured input from a variety of stakeholders regarding a standard definition and evaluation method. These activities will build toward the long-term goal for the PCDH, which is to facilitate the provision of patient-centered dental care that is situated within a comprehensive health home.

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Appendix 1: Dental Home Programs

A number of states have used innovative methods to facilitate access to a dental home for underserved populations and children.

The **Virtual Dental Home Project**, which started in 2010 in California, uses telehealth technologies to initiate care in community-based settings such as Head Start Centers, schools, residential facilities for people with disabilities, and long-term care facilities.⁴⁹ Specially trained dental hygienists and dental assistants collect health history, radiographic, and photographic dental records, and can also provide prevention and early intervention restorative services (e.g. interim therapeutic restorations) in these community-based settings through a health workforce pilot project authorized by the state. The records are then sent to the supervising dentist who makes diagnostic and treatment decisions.

The Virtual Dental Home Project currently serves the following populations: Head Start and elementary school children, adults with developmental disabilities living in group homes, and residents of skilled nursing and acute care facilities. Because members of the dental team are distributed throughout the community, this model reduces barriers to finding a dental home for these underserved populations.⁴⁹

A similar model of teledentistry has also been utilized in Arizona since 2004, when the Northern Arizona University Dental Hygiene Department created a training program for dental hygienists. The **affiliated practice dental hygiene model** permits hygienists to provide preventive, radiographic, and digital imaging services in remote areas that are then sent to a dentist for diagnosis and referral.⁸¹

The Iowa Department of Public Health's **I-Smile™ program**, which began in 2006, emphasizes care coordination using a specially trained workforce of dental hygienists to connect underserved children to dental services.⁸² These 24 regional I-Smile™ coordinators are the point of contact for their regions' agencies and schools that need to connect a child to a dentist. They do this by developing relationships with local dentists and working to increase the numbers who accept Medicaid-enrolled children. I-Smile™ coordinators are also responsible for coordinating the state's school dental screening requirement and several school-based dental screening programs, providing preventive services in WIC and Head Start programs, and more. As a result of this program, the proportion of Medicaid-enrolled children age 0-12 who saw a dentist from 2010 to 2013 increased from 43 to 48 percent.⁸²

The ADA has developed a pilot workforce model with a similar goal to the I-Smile™ coordinators: connecting people to dental care. This model, the **Community Dental Health Coordinator (CDHC)**, is similar to the community health worker (CHW) model in that trainees were recruited from underserved communities to be educated as care coordinators and liaisons between the community and the dental care system.⁸³ CDHCs are also trained in oral health education, community dental outreach programs, and performing dental preventive procedures. This pilot project is currently being evaluated for its cost-effectiveness and its ability to improve access to care for underserved populations.

Kansas' **Dental Hub and Spoke Program** utilizes the state's Extended Care Permit for dental hygienists to work in settings that treat underserved populations (the "spokes"), such as schools, public health departments, and nursing homes.⁸⁴ There they are able to provide preventive dental services and make dental referrals to the "hub" site, which is the safety net dental clinic in which treatment services are provided. Since its inception in 2007, the number of dental visits at 10 grantee hub clinics increased from 42,306 to 93,624 between 2007-2011.⁸⁴

Washington State has a program that aims to connect young Medicaid-enrolled children and pregnant women to a dental home. The **Access to Baby and Child Dentistry (ABCD)** program was established in 1995 by a team from the University of Washington and provides increased reimbursement rates and training for dentists who become certified providers, as well as enhanced dental benefits and outreach to eligible Medicaid-enrolled children.⁸⁵ Dentists and dental staff receive training in child management, preventive education, fluoride varnish application and use of glass ionomer as sealant and restorative material. Providers are then eligible to receive enhanced reimbursement rates (75th percentile of usual and customary fees) for patients enrolled in the program.

One county in Washington State operates a variant of the ABCD program, called the **Mom & Me program**, which started in 1999.⁸⁶ It is unique in that it is almost entirely supported and administered through the local county dental society. The program mirrors ABCD in that it offers training and increased reimbursement for enrolled dentists; however, the population of focus is Medicaid-enrolled mothers and young children. The program's outreach staff educate community members and organizations about the program, assist with enrollment, and act as care coordinators to help with

appointment keeping.

The **Healthy Kids, Healthy Teeth (HKHT)** project in Alameda County, California is similar to the ABCD program. It offers enhanced Medicaid reimbursement to providers who complete training on serving 0-5 year olds.⁸⁷ Similarly, Rhode Island's **RItE Smiles** Medicaid managed care program aims to increase the proportion of young children from low-income families who see a dentist by increasing reimbursement rates for providers who participate in the program.⁸⁷

Dr. Peter Milgrom and others at the Northwest Center to Reduce Oral Health Disparities at the University of Washington also initiated a **dental home project for pregnant women** in 2004 in rural Oregon. The project connects expectant mothers to a source of dental care, provides counseling sessions either at the mother's home or at a Women, Infants, and Children (WIC) center, and provides dental "tool kits" during pregnancy and after birth that contain preventive agents such as xylitol chewing gum, fluoride toothpaste, toothbrushes, and dental floss, and informational materials.^{88,89}

New Mexico has a dental home initiative for people with special needs. This involved creating a **Special Needs Code (SNC)** that allows dentists to receive supplemental reimbursement if they complete a training program on treating patients with developmental disabilities.⁸⁷ The SNC amounts to \$85 per treatment visit and factors in the added time and costs involved in treating patients with developmental disabilities. It was designed to improve the network of dentists who will provide care to this population.

As part of a broader oral health initiative within the Department of Health and Human Services, the **Office of Head Start** has a **dental home initiative** in which the Office has funded a 5-year, \$10 million dollar contract with the American Association of Pediatric Dentistry to develop a national network of dental homes for Head Start and Early Head Start children.⁹⁰ As of 2012, over 1000 dentists had agreed to serve as dental homes for these children.⁹¹

Other states, such as Maine and Michigan, have developed online infrastructure or referral programs via Head Start to connect children from low-income families to dentists who will accept Medicaid.^{92,93}