The Connection Between Poor Oral Health and Chronic Disease

NATIONAL ASSOCIATION OF
CHRONIC DISEASE DIRECTORS
Promoting Health. Preventing Disease.

INTRODUCTION

Poor oral health impacts overall health, particularly for individuals with chronic conditions such as diabetes and heart disease. Despite the well-documented relationship between oral health and overall health, collaboration between public health programs and medical and dental providers is infrequent for many reasons, including a historical separation of medicine and dentistry. Because oral health and primary care medical services are not typically delivered in the same setting and are paid for through separate payment systems, it has been difficult to identify ways to coordinate care between dental and medical providers. With this separation comes missed opportunities to improve patient health outcomes.

When managing chronic diseases such as diabetes and cardiovascular disease, oral health is an important but often overlooked factor for successful chronic disease management. Research indicates that people who have poor oral health (inflamed and bleeding gums and/or untreated cavities) have a more difficult time controlling key indicators related to their chronic medical conditions, such as blood glucose levels (HbA1C) for diabetes and blood pressure for cardiovascular disease.

Each year, approximately 29.3 million people see a dental provider but not a primary care medical provider. As a result, oral health providers have an opportunity to be part of the extended primary care team. They can play an important role in screening their patients for potentially undiagnosed health risks such as hypertension, prediabetes and diabetes, high cholesterol, depression, tobacco use, and substance use disorders and referring them to a primary care provider for follow up. They can also reinforce healthy lifestyle habits such as proper nutrition, avoiding sugar-sweetened beverages, and not using tobacco. Similarly, primary care providers can screen their patients, particularly those with chronic conditions, for unmet oral health needs and refer them to a dental provider for follow-up. They can also promote healthy eating habits related to proper weight management and good oral health.

> “People don’t always understand that the mouth is connected to the entire body. A lot of what happens in the mouth contributes to heart disease, stroke, diabetes, cancer and other chronic conditions.”
>
> -John Robitscher, MPH, NACDD

The term medical-dental integration (MDI) is frequently used to describe the bi-directional relationship between medical and dental providers. It requires a shift in thinking about how medical and dental providers interact in a clinical setting and how they share information about their patients in a way that supports whole-person integrated care. A large body of research confirms that promising approaches to medical-dental integration are being implemented across various health systems, academic institutions, and public health settings in the United States.[1,2]

[1] *Oral Health: An Essential Component of Primary Care: Qualis Health - White Paper.*
[2] *The Primary Care Collaborative. (January 2021). Innovations in Oral Health and Primary Care Integration: Alignment with the Shared Principles of Primary Care. https://www/pcpcc/org/resource/innovations-oral-health-and-primary-care-integration-alignment-shared-principles*

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NACDD Leads Efforts to Develop a National Framework for Medical-Dental Integration (MDI)

In 2018 the CDC funded NACDD to develop a National Framework for medical-dental integration. In collaboration with KDH Research & Communication (KDHRC), an extensive literature review was conducted that included over 4,000 articles from the peer-reviewed and gray literature. The findings from that literature review were sorted and categorized. Key informant interviews and focus groups were conducted to obtain feedback on the findings and resulted in the identification of four pillars that form the basis for a national action framework for MDI. KDHRC, in collaboration with NACDD, developed a white paper titled *Oral Medical Care Coordination: A Systematic Literature Review and Guide Forward* that outlines the process that was used to inform the development of the framework and the rationale for promotion oral medical care coordination broadly. The four pillars that form the basis for the national action framework are:

Awareness

Increase understanding about integrated care and the oral-systemic connection across the lifespan.

Workforce Development and Operations

Empower care professionals and others to work across disciplines to establish organizational structures supporting whole-person integrated care.

Information Exchange

Create structures to share meaningful and actionable health information to support patient care.

Payment

Establish sustainable financing, reimbursement, and incentives to support optimal health outcomes.

The national action framework aims to accelerate collaborations among clinical, public health, community, and other partners at three levels of engagement.

Micro-level examples: consumers, a particular clinic or school;

Mid-level examples: state health departments, healthcare systems

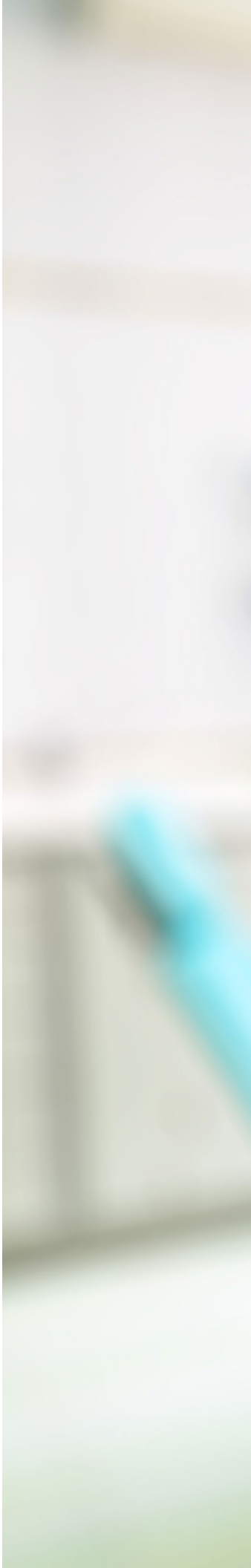
Macro-level examples: payers, federal government, national professional organizations

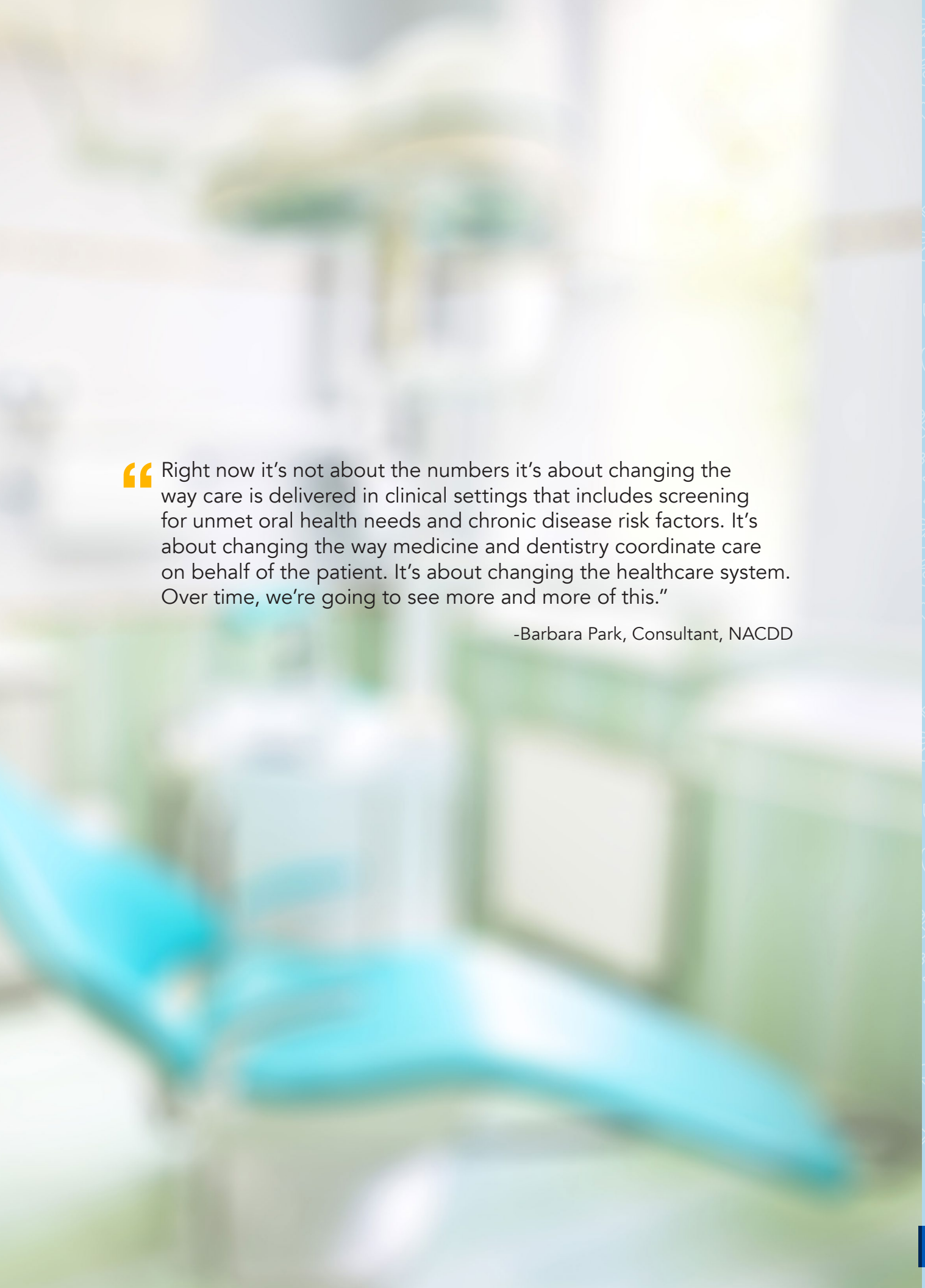
State Health Departments Have an Important Role in Promoting the Link Between Oral Health and Chronic Disease

State health departments have an important role in promoting oral medical care coordination. They are well-positioned to leverage resources at the state and local levels as mid-level partners. In September 2018, the Centers for Disease Control and Prevention (CDC) funded the National Association of Chronic Disease Directors (NACDD) to work with five State Health Departments (CO, CT, ND, SC, and VA) funded under CDC-RFA-DP18-1810. The purpose of the project was to document successful approaches for increasing the effectiveness of state oral health and chronic disease program collaborations with dental clinics and community providers to screen for chronic conditions such as hypertension, prediabetes, and diabetes.

The project had three overarching objectives:

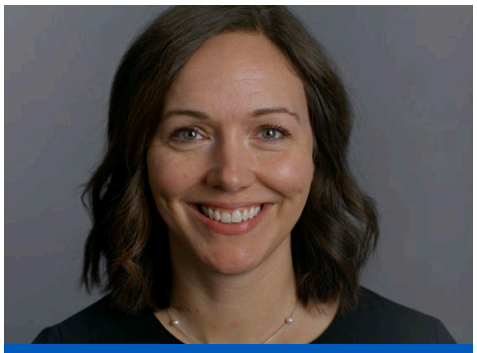
1. Enhance the knowledge and skills of state oral health and chronic disease programs to address oral health and chronic disease through effective collaboration models.
2. Promote the adoption and implementation of medical-dental integration models by increasing the knowledge and skills of state oral health and chronic disease programs.
3. Increase the publication of promising and evidence-based practices, including success stories, case studies, white papers, evaluation reports, and peer-reviewed articles.





> “Right now it’s not about the numbers it’s about changing the way care is delivered in clinical settings that includes screening for unmet oral health needs and chronic disease risk factors. It’s about changing the way medicine and dentistry coordinate care on behalf of the patient. It’s about changing the healthcare system. Over time, we’re going to see more and more of this.”
>
> -Barbara Park, Consultant, NACDD

Five States Took Different Approaches to Overcome Similar Challenges



Watch Video Introduction

Colorado

Diabetes, Cardiovascular Disease and Oral Health Integration Project: (DCVDOHI)

- Worked with six Federally Qualified Health Centers (FQHC) and non-FQHC clinics.
- Increased diabetes and cardiovascular disease screening, bi-directional referral, and clinical workflow improvements.

Watch Video Introduction

Connecticut

Prediabetes Screening and Referral by Dental Providers

- Worked with the state's largest FQHC.
- Delivered training for medical and dental providers to screen patients with pre- diabetes for follow-up assessments and referral to an in-house CDC-recognized lifestyle change program.

Watch Video Introduction

North Dakota

Hypertension Screening and Referral by Dental Providers for Follow-Up Care

- Worked with nine clinic partners (non-profit clinic, FQHCs, and private dental practices).
- Screened adult patients for undiagnosed or uncontrolled hypertension and referred patients with elevating blood pressure to a primary care provider and/or community pharmacy for follow-up.

Watch Video Introduction

South Carolina

Increasing Awareness About the Link Between Poor Oral Health and Diabetes

- Worked with the state's four Regional Health Coordinators to promote the Oral Health and Diabetes Medical Dental Integration (OHD-MDI) project.
- Expanded existing oral health networks and integrated oral health messages into educational outreach activities for people with diabetes.

Watch Video Introduction

Virginia

Partnering with Free and Charitable Clinics to Increase Access to Care

- Created a cohort of free and charitable medical and dental clinics, including referral protocols, to increase access to oral services.
- Activated community health workers across the state to promote the link between poor oral health and chronic disease.

> "We provide resources but ultimately it is the community members who actualize the change."
>
> -John Robitscher, MPH, NACDD

Partner Actions to Improve

INTRODUCTION

In September 2018, the Centers for Disease Control and Prevention (CDC) Division of Oral Health (DOH) funded **NACDD** to work with five State Health Departments (**CO, CT, ND, SC, and VA)** funded under DP18-1810 Component 2.

The purpose of the project is to document successful approaches for increasing the effectiveness of **state oral health** and **chronic disease programs** to collaborate with dental clinics and community providers **to screen for** chronic conditions such as **hypertension, pre-diabetes, and diabetes**.

IMPACT

Awareness has increased among community clinic partners about the **link between oral health and chronic disease**.

Promising models of collaboration between oral health and chronic disease programs have been identified.

Oral health programs are being viewed as a **valuable partner** by chronic disease programs.

Colorado
Diabetes, Cardiovascular Disease and Oral Health Integration Project: (DCVDOHI)

Worked with Federally Qualified Health Centers (FQHC) and non-FQHC clinics to increase diabetes and cardiovascular disease screening, bi-directional referral, and clinical workflow improvements.

Five States Took Different Approaches To Overcome Similar Challenges

Virginia
Partnering with Free and Charitable Clinics to Increase Access to Care

Created a cohort of free and charitable medical and dental clinics, including referral protocols, to increase access to oral services. Activated CHW's across the state to promote the link between poor oral health and chronic disease.

This poster was supported by Cooperative Agreement Number 5NU58DP006574-04, funded by the Centers for Disease Control and Prevention. Its Department of Health and Human Services.

Image of a poster describing approaches states took to improve oral health outcomes

e Oral Health Outcomes in States

Barbara Z. Park, RDH, MPH

Connecticut
Pre-Diabetes Screening and Referral by Dental Providers

Worked with the state's largest FQHC to provide training for medical and dental providers to screen patients with pre-diabetes for follow-up assessments and referral to an in-house CDC-recognized lifestyle change program.

North Dakota
Hypertension Screening and Referral by Dental Providers for Follow-Up Care

Worked with clinic partners (Free Clinic, FQHCs, and private dental practices) to screen adult patients for undiagnosed or uncontrolled hypertension and refer them to a primary care provider and/or community pharmacy for follow up.

South Carolina
Increasing Awareness About the Link Between Poor Oral Health and Diabetes

Worked with the state's four Regional Health Coordinators to promote the Oral Health and Diabetes Medical Dental Integration (OHD-MDI) project by expanding existing oral health networks and integrating oral health messages into educational outreach activities for people with diabetes.

OBJECTIVES

1. Increased knowledge and skills of state oral health and chronic disease programs to address oral health and chronic disease **by implementing models of collaboration.**

2. Increased knowledge and skills of state oral health and chronic disease programs to **promote the adoption and implementation of medical-dental integration models**.

3. Increased **publication of promising and evidence-based practices in states**, including success stories, case studies, white papers, evaluation reports, and peer reviewed articles.

OUTLOOK

NACDD is developing success stories to document the different approaches taken by each of the five states. They will include **digital and web-based stories.**

Presentations about this project are planned for the CDC DOH grantee closeout meeting in March 2024, and the National Oral Health Conference in April 2024.

An article about this project is currently under development for publication in the *Preventing Chronic Disease* journal.

Diabetes, Cardiovascular Disease and Oral Health Integration Project: (DCVDOHI)

Over the next 30 years, Colorado will likely experience a rise in the prevalence of diabetes, cardiovascular disease, and oral disease, as well as an increase in healthcare costs for treating individuals with multiple chronic conditions. According to the CDC, diabetes and cardiovascular diseases cost Colorado approximately $10.6 billion each year, and dental care costs were almost $1.5 billion (2015), with a large proportion of these expenditures borne by individuals or Medicaid. Additionally, research indicates that uncontrolled periodontal disease can make diabetes and cardiovascular disease more difficult to manage causing a deleterious cycle of illness.

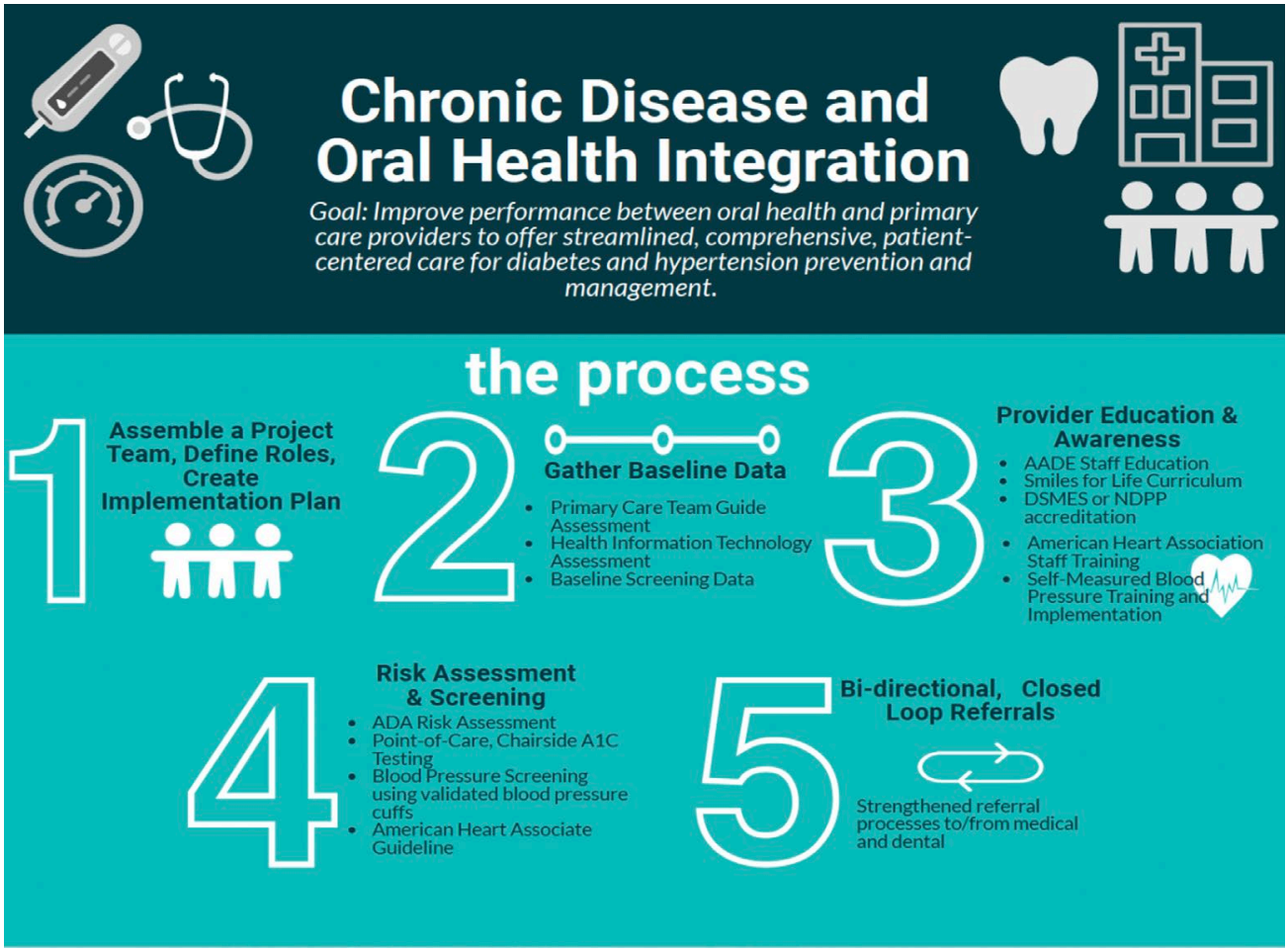
Approach/Partners

Colorado has a long history of working with partners to implement medical-dental integration (MDI). In 2016, the Colorado Department of Public Health and Environment (CDPHE) received a CDC-1609 "Models of Collaboration" two-year pilot grant to include oral health in chronic disease management and foster collaboration between state level chronic disease and oral health programs. Along with partners, the CDPHE Oral Health Unit developed the Diabetes Oral Health Integration (DOHI) quality improvement change package to improve coordination of medical and dental services to prevent and manage diabetes among patients of Colorado Community Health Centers (CHC). Funding from CDC DP18-1810 and other state and federal funds allowed the CDPHE to expand upon the DOHI model to include screening and bidirectional referral for cardiovascular disease risk factors (hypertension). The expanded Diabetes, Cardiovascular Disease, and Oral Health Integration (DCVDOHI) change package was implemented across six organizations within the Colorado Community Health Network (CCHN). These organizations varied in location (rural and urban), populations served, patient volume and colocation of medical and dental clinics (some collocated, and others separate).

DCVDOHI Clinic Partners

- Axis Health System
- Colorado Coalition for the Homeless
- STRIDE Community Health Centers
- Summit Community Care Clinic
- Uncompahgre Medical Center
- Valley-Wide Health System

> “This project has transformed patient care.”
>
> -Carol R., Colorado Coalition for the Homeless



Process details for the Colorado DCVDOHI project

Successes

CDHPE used a clinical quality improvement (CQI) approach for this work, including oral health as part of its CQI portfolio. This resulted in a mindset shift within Colorado’s community health center (CCHN) partners. For example, implementing MDI strategies in one area of the clinic can lead to integration in other areas, such as pharmacy and behavioral health, creating a climate of innovation within a CHC to creatively address other barriers to care.

All clinic partners successfully implemented and sustained both the diabetes management and hypertension parts of the DCVDOHI change package over the five-year project period despite setbacks from COVID-19, CHC staff turnover, workforce shortages, and partner staff turnover.

Clinic Successes

Hypertension Screening and Referrals from Dental to Medical

6
clinics implemented this work

4.3 years
average length of implementation

80,000
blood pressure screens reported in dental clinics

37,000
screens indicating potential hypertension

7,654
documented referrals

(Pre)diabetes Risk Assessments and Referrals from Dental to Medical

6
clinics implemented this work

3.0 years
average length of implementation

8,000
risk assessments administered

1,300
risk assessments indicating high risk for (pre)diabetes

279
documented referrals

A1c Screening and Referrals

2
clinics implemented this work

3.5 years
average length of implementation

1,300
A1c screens administered

400
A1c screens indicating potential (pre)diabetes

As a result, patients are receiving timely diagnoses and care for chronic conditions whereas in the past, this care may have been delayed or never happened. Patients also take ownership of their health and request testing and interventions from their dental and medical providers. Through anecdotal feedback, providers and champions have confirmed that the project has positively impacted the care they provide to patients.

In addition to medical and dental staff, CHC pharmacists can be and have been an integral part of this work. Referrals to pharmacists have provided chronic disease education and counseling for patients and increased opportunities for timely medication management. Engaging clinic pharmacists has also reduced barriers to patient scheduling and access to primary care providers.

> “The majority of the clinics we’ve supported to do MDI work now describe this program as a “normal” part of their standard workflows every day. This was not the case when we started, but continued support, remaining vigilant, and finding creative solutions have been key to success and sustainability.”
>
> -CDPHE staff

Challenges

While the DCVDOHI change package was successfully implemented and sustained across all partner sites, there were challenges during the project period. Systemic silos exist within healthcare delivery systems, and both patients and providers have become accustomed to these silos in care. Targeted education was necessary for providers and patients to facilitate provider buy-in and promote patient understanding of the integrated approach to their care. Limited interoperability between medical and dental EHRs makes tracking of patient data, including referrals between medical and dental, time consuming and burdensome for provider. This has large impacts on medical-dental integration and work on this issue will continue beyond this project period.

> "This is the hardest project I have ever done in my professional career."
>
> -Carol N., Colorado Coalition for the Homeless

> "You cannot do clinical quality improvement work when clinics are in survival mode."
>
> -CDPHE staff

Staffing turnover or lack of staff is an ongoing issue but was especially prevalent during the COVID-19 pandemic when staff were leaving or deployed for pandemic response. Turnover has caused a slowdown in the project work. However, working with clinics to create standard, written workflows helped ensure this project continued running smoothly even with staffing concerns.

Integration is more challenging at standalone clinics than those that are co-located. That is because coordinating referrals between dental and medical (and vice versa) and tracking follow-up requires an 'extra' step outside the clinic because conducting a 'warm handoff' is impossible.

Key Takeaways

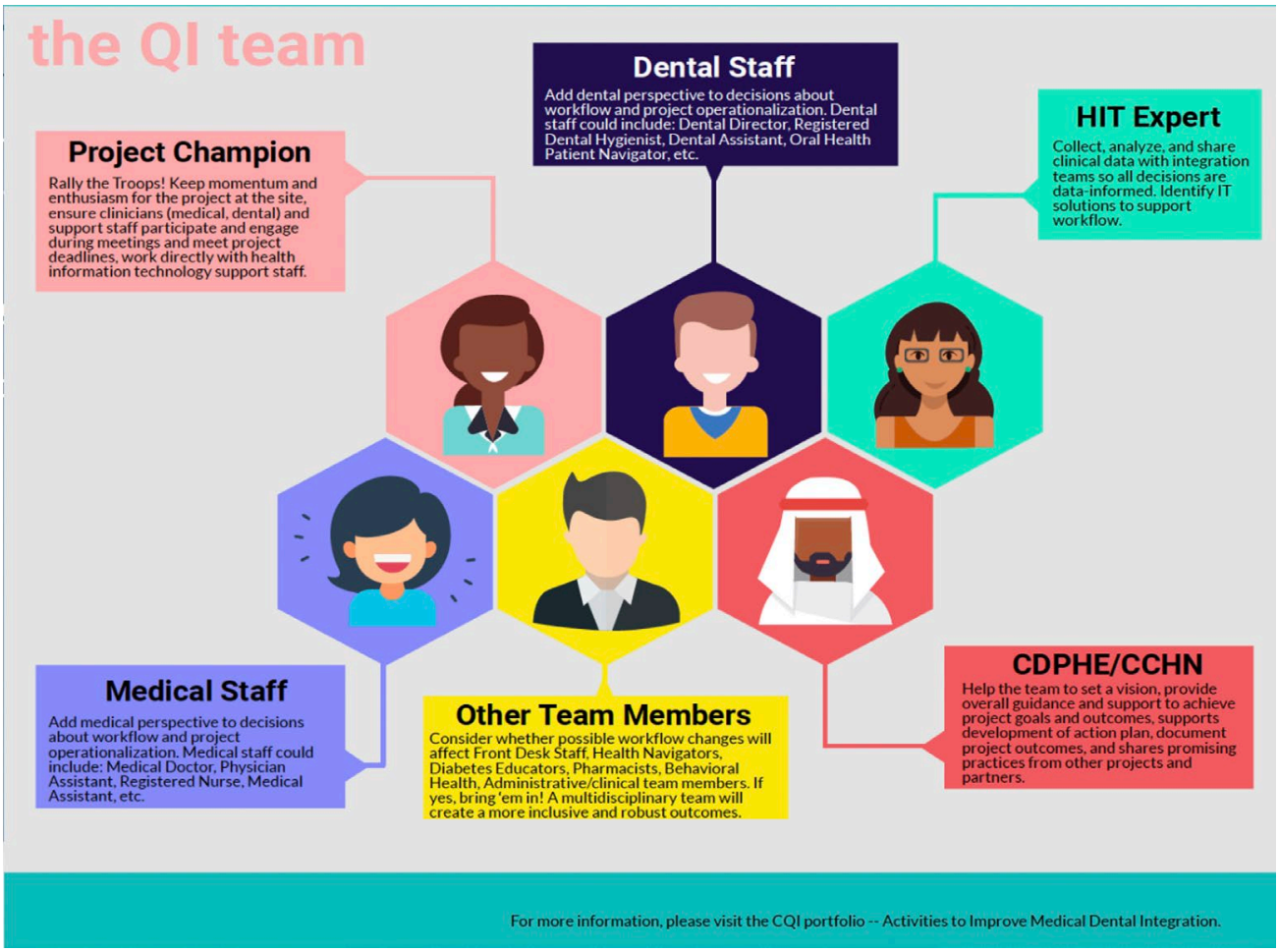
- EHR interoperability is an important component of the MDI process.
- The DCVDOHI change package has been successfully used in a variety of clinic settings, including clinics that are rural/urban and have high/low patient volumes. It has also been successful among patients with high social drivers of health (SDOH) needs.
- The workflow development and implementation process is important. These workflows can become a normal and sustainable component of daily operations within clinics.
- Having a stable team to champion this work has been key to the success because staff buy-in can take time. Providers may be reluctant to put time and resources into MDI at first. Still, after providers (sometimes gradually) come on board, they become champions for this work when they see the positive impact it has on their patients.

Future Opportunities

DCVDOHI resources will be available on both the Colorado Oral Health and the CCHN websites. The Colorado DHPE Oral Health Unit hopes to continue, along with CCHN, to provide technical assistance to current DCVDOHI sites and any potential new partners contingent on funding. Success in various clinic types has created a ripple effect among CHC, with more clinics outside the five current partners considering integrating diabetes and hypertension prevention and management into patient care. Clinics are also considering integrating behavioral health and oral health using this model and intend to continue collaborating with in-house pharmacy teams.

These pages: Graphics from the CQI portfolio website, which helps users select and implement CQI activities.

Graphic detailing activities to improve medical-dental integration from the CQI portfolio website



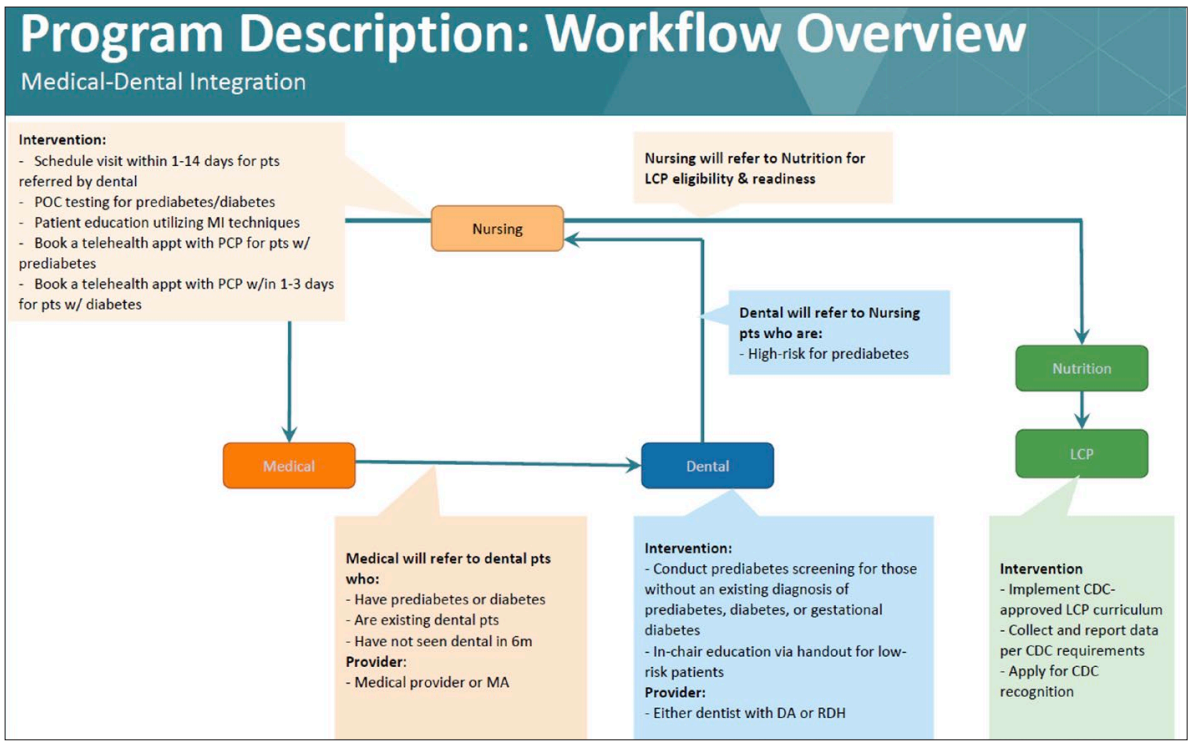
Graphic describing the QI team

Prediabetes Screening and Referral by Dental Providers

Linkages exist between oral disease, prediabetes, and obesity, which pose a significant health burden for Connecticut (CT) residents. In 2014, according to the CT Behavioral Risk Factor Surveillance Survey (BRFSS), 9.4% of adults (270,000 adults) were diagnosed with diabetes, and approximately 950,000 adults had prediabetes, but only 8.3% of adults reported having been told they had prediabetes. BRFSS 2015 data showed that CT adults with diabetes experience a higher rate of tooth loss (70%) compared to adults without diabetes (35.9%).

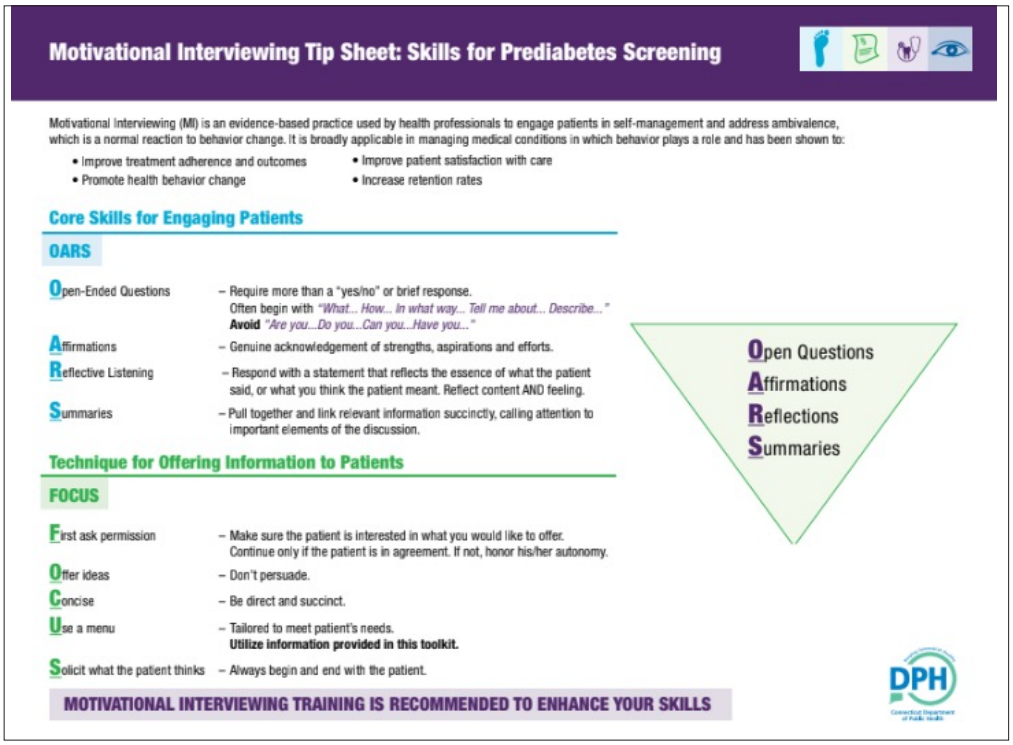
Approach/Partners

To address the risk of diabetes and its connection to oral health, the Connecticut Department of Public Health, Office of Oral Health (CT DPH) partnered with Community Health Center, Inc. (CHCI), the largest Federally Qualified Health



Medical-dental integration workflow

Center (FQHC) in the state to implement a medical-dental integration (MDI) project to improve oral health and chronic disease outcomes. CT DPH and CHCI collaborated on a process in which CHCI adult dental patients were screened for prediabetes using a prediabetes risk assessment toolkit developed by CT DPH for use within medical and dental settings. Providers referred patients at risk for diabetes to primary care and, if needed, to an in-house CDC-recognized Lifestyle Change Program (LCP).



Motivational Interviewing Tip Sheet: Skills for Prediabetes Screening

Motivational Interviewing (MI) is an evidence-based practice used by health professionals to engage patients in self-management and address ambivalence, which is a normal reaction to behavior change. It is broadly applicable in managing medical conditions in which behavior plays a role and has been shown to:

- Improve treatment adherence and outcomes
- Promote health behavior change
- Improve patient satisfaction with care
- Increase retention rates

Core Skills for Engaging Patients

OARS

Open-Ended Questions – Require more than a "yes/no" or brief response. Often begin with *"What... How... In what way... Tell me about... Describe..."* **Avoid** *"Are you...Do you...Can you...Have you..."*

Affirmations – Genuine acknowledgement of strengths, aspirations and efforts.

Reflective Listening – Respond with a statement that reflects the essence of what the patient said, or what you think the patient meant. Reflect content AND feeling.

Summaries – Pull together and link relevant information succinctly, calling attention to important elements of the discussion.

Open Questions
Affirmations
Reflections
Summaries

Technique for Offering Information to Patients

FOCUS

First ask permission – Make sure the patient is interested in what you would like to offer. Continue only if the patient is in agreement. If not, honor his/her autonomy.

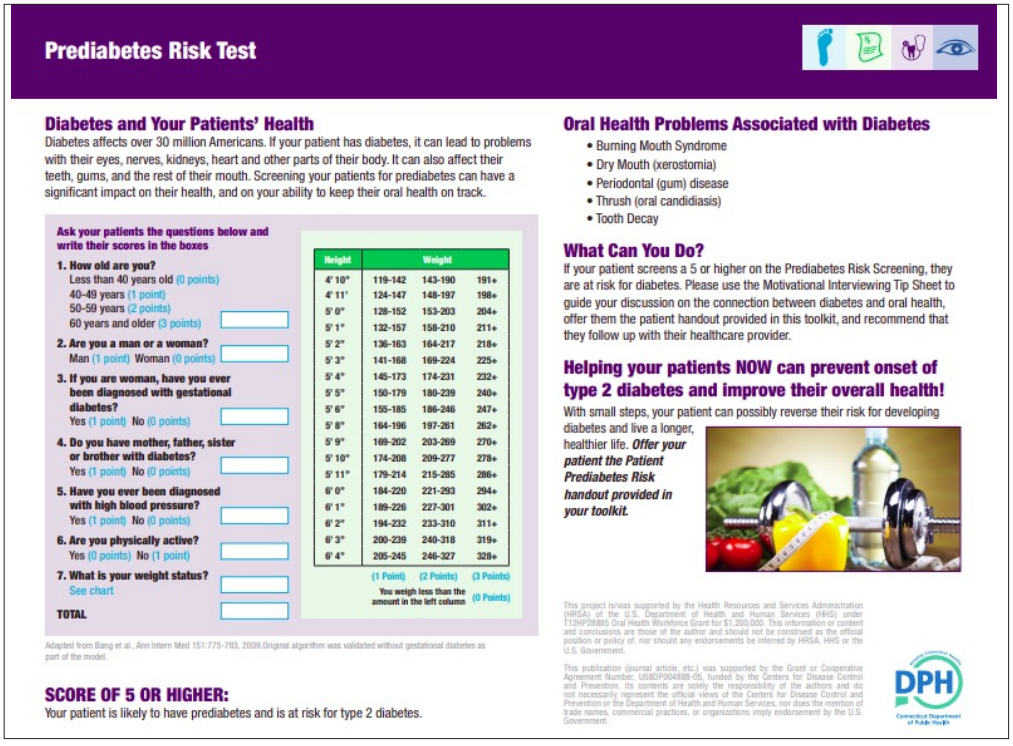
Offer ideas – Don't persuade.

Concise – Be direct and succinct.

Use a menu – Tailored to meet patient's needs. **Utilize information provided in this toolkit.**

Solicit what the patient thinks – Always begin and end with the patient.

MOTIVATIONAL INTERVIEWING TRAINING IS RECOMMENDED TO ENHANCE YOUR SKILLS



Prediabetes Risk Test

Diabetes and Your Patients' Health

Diabetes affects over 30 million Americans. If your patient has diabetes, it can lead to problems with their eyes, nerves, kidneys, heart and other parts of their body. It can also affect their teeth, gums, and the rest of their mouth. Screening your patients for prediabetes can have a significant impact on their health, and on your ability to keep their oral health on track.

Ask your patients the questions below and write their scores in the boxes

1. **How old are you?**
   Less than 40 years old (0 points)
   40-49 years (1 point)
   50-59 years (2 points)
   60 years and older (3 points) ☐
2. **Are you a man or a woman?**
   Man (1 point) Woman (0 points) ☐
3. **If you are woman, have you ever been diagnosed with gestational diabetes?**
   Yes (1 point) No (0 points) ☐
4. **Do you have mother, father, sister or brother with diabetes?**
   Yes (1 point) No (0 points) ☐
5. **Have you ever been diagnosed with high blood pressure?**
   Yes (1 point) No (0 points) ☐
6. **Are you physically active?**
   Yes (0 points) No (1 point) ☐
7. **What is your weight status?**
   See chart ☐

TOTAL ☐

Height	Weight			
4' 10"	119-142	143-190	191+	
4' 11"	124-147	148-197	198+	
5' 0"	128-152	153-203	204+	
5' 1"	132-157	158-210	211+	
5' 2"	136-163	164-217	218+	
5' 3"	141-168	169-224	225+	
5' 4"	145-173	174-231	232+	
5' 5"	150-179	180-239	240+	
5' 6"	155-185	186-246	247+	
5' 8"	164-196	197-261	262+	
5' 9"	169-202	203-269	270+	
5' 10"	174-208	209-277	278+	
5' 11"	179-214	215-285	286+	
6' 0"	184-220	221-293	294+	
6' 1"	189-226	227-301	302+	
6' 2"	194-232	233-310	311+	
6' 3"	200-239	240-318	319+	
6' 4"	205-245	246-327	328+	
	(1 Point)	(2 Points)	(3 Points)	
	You weigh less than the amount in the left column			(0 Points)

Adapted from Bang et al., Ann Intern Med 151:775-783, 2009.Original algorithm was validated without gestational diabetes as part of the model.

SCORE OF 5 OR HIGHER:
Your patient is likely to have prediabetes and is at risk for type 2 diabetes.

Oral Health Problems Associated with Diabetes

- Burning Mouth Syndrome
- Dry Mouth (xerostomia)
- Periodontal (gum) disease
- Thrush (oral candidiasis)
- Tooth Decay

What Can You Do?

If your patient screens a 5 or higher on the Prediabetes Risk Screening, they are at risk for diabetes. Please use the Motivational Interviewing Tip Sheet to guide your discussion on the connection between diabetes and oral health, offer them the patient handout provided in this toolkit, and recommend that they follow up with their healthcare provider.

Helping your patients NOW can prevent onset of type 2 diabetes and improve their overall health!

With small steps, your patient can possibly reverse their risk for developing diabetes and live a longer, healthier life. ***Offer your patient the Patient Prediabetes Risk handout provided in your toolkit.***

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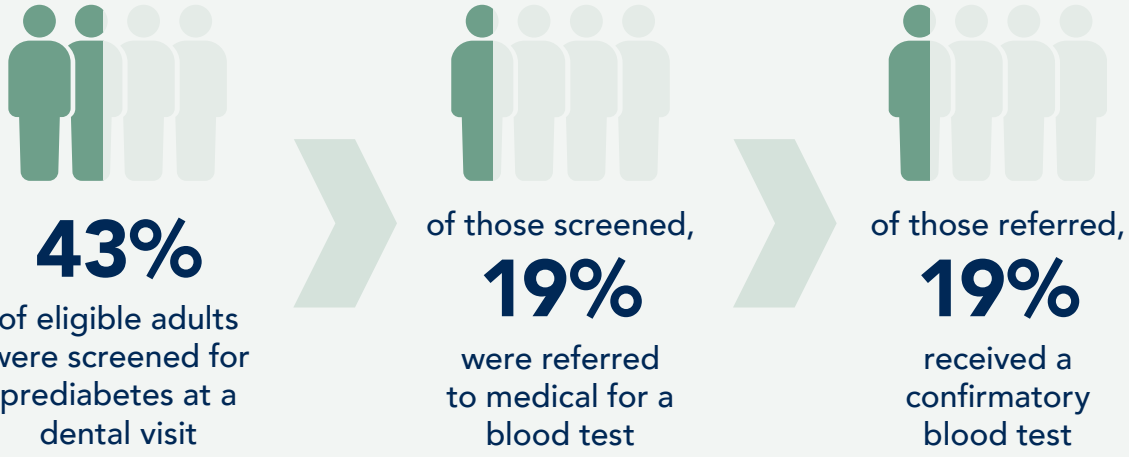
Sample training materials

Screening Success: Adults Screened for Prediabetes at a Dental Visit and Referred to Medical



Implementing this screening and referral process required several steps. CT DPH engaged a vendor to train CHCI medical and dental providers on the connection between medical and dental care of patients and on motivational interviewing skills so providers could better engage patients in discussions regarding the connection between oral health and chronic disease.

CHCI leadership collaborated with medical, dental, and nutrition teams to develop a bidirectional referral system with workflows to identify, screen, refer, and track patients at risk of developing diabetes. This system included an update to the decision support screens in the CHCI EHR system to alert medical providers if a patient needed a dental exam. The CHCI team also initiated the process to become a CDC-recognized LCP and offer the program in-house to CHCI patients to reduce patient barriers to access and allow for better tracking of patient outcomes.

Successes

Normalizing this workflow and the process of providing in-chair education of patients using motivational interviewing techniques resulted in patients actively seeking other services within CHCI.

The MDI partnership between CT DPH and CHCI led to a bidirectional referral system that ensures medical and dental teams coordinate referrals, interprofessional education, and collaboration so that patients receive comprehensive care. Embedding medical screenings (Prediabetes Risk) within the dental workflow allowed an opportunity to assess risk in patients who may not have been seen by a medical provider or are more engaged with their dental provider than their medical provider. Normalizing this workflow and providing in-chair education of patients using motivational interviewing techniques resulted in patients actively seeking other services within CHCI. Implementing a Lifestyle Change Program in-house offered patients an opportunity to continue receiving care within CHCI and allows providers to better monitor patient outcomes.

Challenges

Integrating the prediabetes screening process into the CHCI EHR system was difficult. After implementing the system, staff found the prediabetes screening and referral workflow time-consuming, given the existing tasks addressed during dental and medical visits. Since reimbursement for the added prediabetes screening was unavailable, staff could not extend visits to accommodate the workflow changes better. While the screening and referral process was implemented and patients were referred to the LCP, retaining participants for the entirety of the program was a challenge. Additionally, the dieticians who facilitated the LCP were not eligible for reimbursement through Medicaid because the program was delivered virtually.

Key Takeaways

- Sustainability requires a commitment to integration from all levels.
- Systems and workflows should be automated as much as possible so there is no additional work for the clinical teams and existing workflows should be leveraged.
- Adding the prediabetes tools to the workflows was a challenge initially, but once the teams started to use the tools and refer patients, there was more provider buy-in. However, due to staff turnover, planning for and offering refresher training is important.
- Commit to working with partners to seek reimbursement at the state level.

Future Opportunities

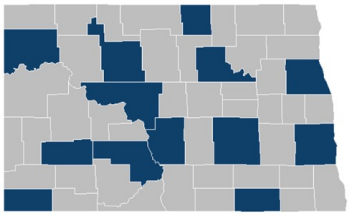
CT DPH plans to continue working with CHCI to expand screening and referrals to other clinics within the CHCI system. They will also continue to work with Medicaid to reimburse for virtual delivery of the Lifestyle Change Program.

Hypertension Screening and Referral by Dental Providers for Follow-Up Care

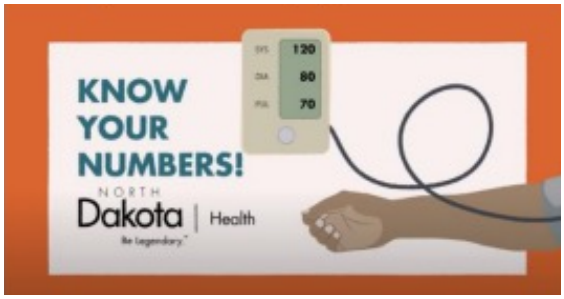
North Dakota is a rural state in which 70% of the counties are considered 'frontier' with six or fewer residents per square mile, leading to challenges in accessing and delivering medical and dental health services. Hypertension or high blood pressure (HBP) is a serious health concern within North Dakota, with nearly one in three (30.4%) adults diagnosed with HBP. More North Dakota adults report visiting a dentist (67.2%) than a medical provider (62.5%) in the last 12 months. Dental providers in North Dakota represent an underutilized group that can work with medical partners on strategies to screen for HBP and bridge the gap in access to care in this sparsely populated state.

Approach/Partners

The North Dakota Department of Health (ND DOH), Oral Health Program reviewed data from the Behavioral Risk Factor Surveillance System to determine which counties in North Dakota had the highest rates of HBP. They worked with dental partners in those areas of the state to implement blood pressure screenings for all patients aged 18 or older. Partners included private practice dental offices, Federally Qualified Health Centers, and one non-profit clinic. These clinics received training from ND DOH and another partner, Quality Health Associates, on how to accurately take a blood pressure reading to refer patients with high blood pressure to a medical provider for follow-up and treatment to create a bidirectional referral system.



North Dakota counties with at least one partner dental provider participating in the blood pressure screening project



In addition to their work with clinic partners, ND DOH, in collaboration with other external partners, developed a media campaign to educate the general public about oral health and its connection to chronic disease through written materials and videos. They also developed a campaign to educate tribal communities about high blood pressure though a video that is reflective of the American Indian culture in North Dakota and was aired in tribal communities throughout

ND. In addition, they developed materials to educate the healthcare community on the connection between oral health, HBP, and chronic disease through written materials, including a manual on blood pressure measurement in dental practices.

Partners

- Bridging the Dental Gap
- Family Healthcare
- Ideal Image Dentistry
- Northland Health Centers
- Orn Family Dentistry
- Prairie Dental
- Selle Family Dental
- Spectra Health
- Thrifty White Pharmacy
- Wyoming Survey & Analysis Center
- North Dakota Dental Foundation
- Quality Health Associates of North Dakota
- Spirit Lake Health Center
- Trenton Community Clinic
- Sincere Smiles
- Cotter Dental
- Joy Dental
- North Dakota Medicaid
- North Dakota Dental Association
- KAT & Company
- Blue Cross & Blue Shield of North Dakota

A FQHC dental provider screening saved a patient's life.

A patient had a BP screening at an FQHC dental clinic and presented with very high blood pressure. He was sent to the medical side of the FQHC and then to a hospital emergency room, where he collapsed due to a heart attack. He credits the dental office for alerting him to his high blood pressure which ultimately saved his life.

Successes

During this project, ND DOH successfully worked with various dental offices to implement BP screening and referral to medical providers. The rurality of ND necessitated the creation of partnerships with private, FQHC, and non-profit dental partners. Integrating BP screening into the dental workflow was, in most cases, simple. Dental partners could partner with medical providers at local public health units and in the case of one dental partner, a nearby pharmacy, to refer patients without a primary care physician for HBP follow-up. Over the life of the project, more than 97,000 individuals were screened for high blood pressure. In several cases, individuals were found to be in hypertensive crisis during screening, and medical intervention provided potentially life-saving treatment. Additionally, patients have expressed gratitude for the screenings as they have learned to take the risk of having high blood pressure seriously. Along with the in-clinic work, ND DOH aired a digital and television media campaign to raise awareness about the importance of regular dental checkups in maintaining a healthy blood pressure. The digital campaign reached almost 500,000 individuals and aired over 76,000 times on television.

Patients have expressed that they are grateful for the screenings as they have learned to take the risk of having high blood pressure seriously.

Project successes, 2019-2024

12
dental practices with 14 offices

121
dental providers trained

112,436
blood pressure screenings

13,930
high blood pressure readings

2,057
referrals

824
referral follow-up connections

Challenges

Dental offices have workflows, IT capabilities, and staffing at various places. Because of this, it was critical to identify a referral process that worked for each dental office. Establishing a bidirectional referral between dental and medical providers was challenging as the systems providers use need to communicate with each other. And there was often limited follow-up from medical providers when patients were referred. For dental partners who opted not to continue with the project as it progressed, it was primarily the data collection and administrative hurdles that prevented continued engagement. Some of the dental offices had a hard time prioritizing data collection due to limited staff capacity.

Key Takeaways

- Implementing a blood pressure screening project across a rural state like ND takes partnerships. Establishing partnerships early is essential to developing open communication.
- Being adaptable is the key to success. Not all dental offices operate in the same way, and they don't operate the same way as medical practices. Flexibility is important to make sure screening processes work for each office.
- There are technological barriers. Dental and medical EHRs do not communicate with each other well, making any bidirectional referral system less efficient than it could be. Collecting required data can also burden dental offices, especially those with limited staff. More technological capabilities are needed to make bidirectional referrals effective.

Future Opportunities

BP screening has now become normalized as part of the workflow within participating dental offices. Partners sites will continue to conduct BP screenings and referrals but will not collect data after the project ends. ND DOH plans to continue this work and expand to additional partners.

Increasing Awareness About the Link Between Poor Oral Health and Diabetes

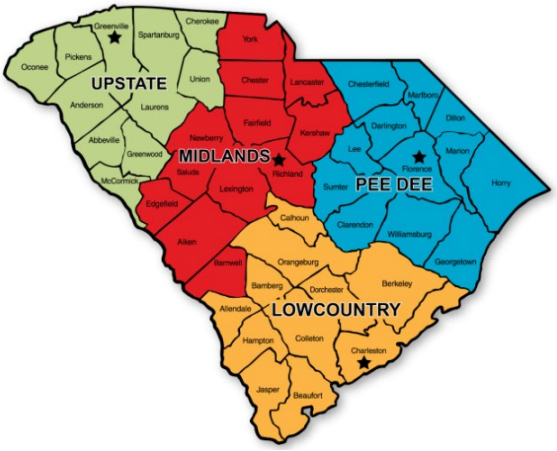
The estimated prevalence of diagnosed diabetes in South Carolina is 13% among adults aged 20 years and older. In comparison with other states, South Carolina ranks above the national median for diagnosed diabetes. Research supports that addressing unmet oral health needs improves diabetes-related outcomes for people with uncontrolled hemoglobin A1c (HbA1c) levels. Since these two conditions affect each other, it is important for healthcare providers, dental providers, and patients to understand how to recognize and manage both conditions.

Approach/Partners

To promote the connection between oral health and diabetes, the South Carolina Department of Health and Environmental Control (SC DHEC) through the Oral Health-Diabetes Medical Dental Integration (OHD-MDI) initiative, expanded upon its existing experience with medical-dental integration to include addressing the oral health needs of patients with diabetes. The approach included four components:

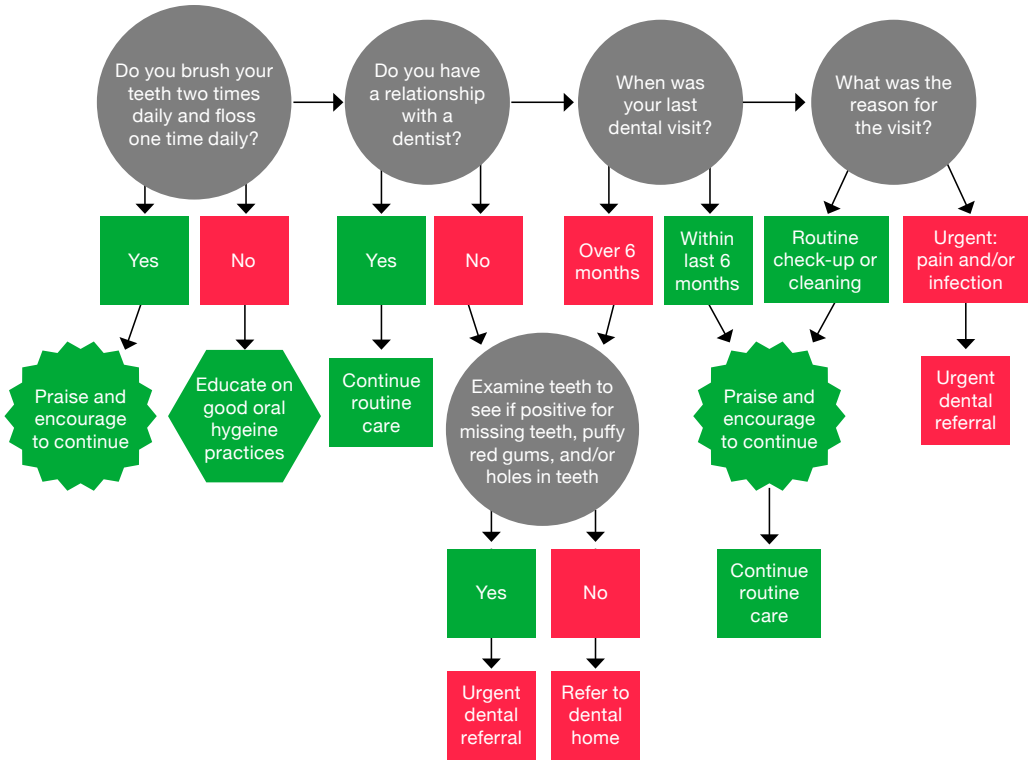
- Expand existing oral health networks,
- Integrate oral health messages into education and outreach activities for people with diabetes through internal and external channels,
- Strengthen community-clinical linkages to include diabetes screening for dental patients and dental screenings for patients with diabetes, and
- Raise awareness through social media channels.

The OHD-MDI team identified a Medical-Dental Integration (MDI) Leadership Team which consisted of medical and dental providers and other public and private sector stakeholders who provided program oversight and advice including helping to identify messages for outreach materials and providing



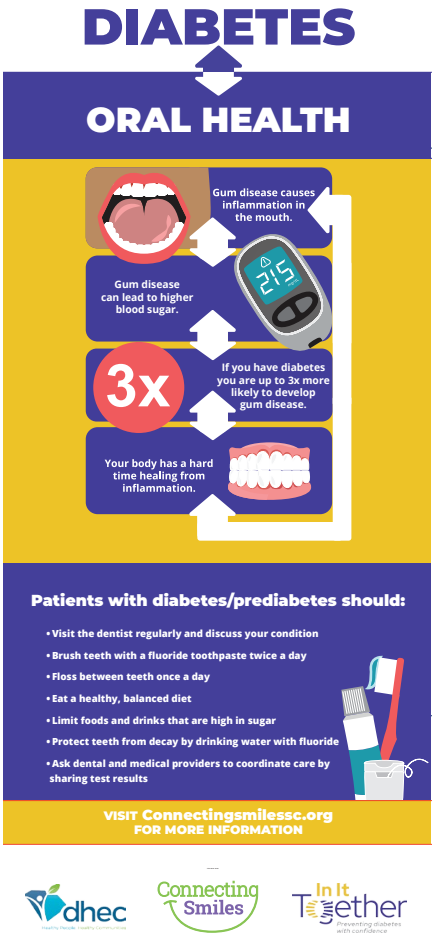
Clinic Partners

- Community Systems Directors and their teams in the four statewide public health regions: Upstate, Midlands, Pee Dee, and Lowcountry
- The MDI Leadership Team comprised of healthcare providers and public and private sector stakeholders



Oral Health Screening Flow Chart

connections to community members addressing diabetes. They also collaborated with regional staff to expand the reach of the project into the four public health regions in the state. Within these regions, Community Engagement Directors and staff including health educators and community health workers were trained to include information about oral health and diabetes when collaborating with both external stakeholders and patients with diabetes. To support these regional outreach efforts and raise awareness about the connection between oral health and diabetes, SC DHEC developed and disseminated an MDI Oral Health Diabetes Tool Kit that included information for both patients and providers, materials for use in clinics, screening tools for medical and dental settings, and a PowerPoint presentation for use by regional staff. DHEC also shared messages on social media monthly to educate priority populations about oral health and diabetes.



Successes

The major success of the OHD-MDI initiative has been increased awareness about the connection between oral health and diabetes statewide. Achieving an elevated level of internal and

Project Successes

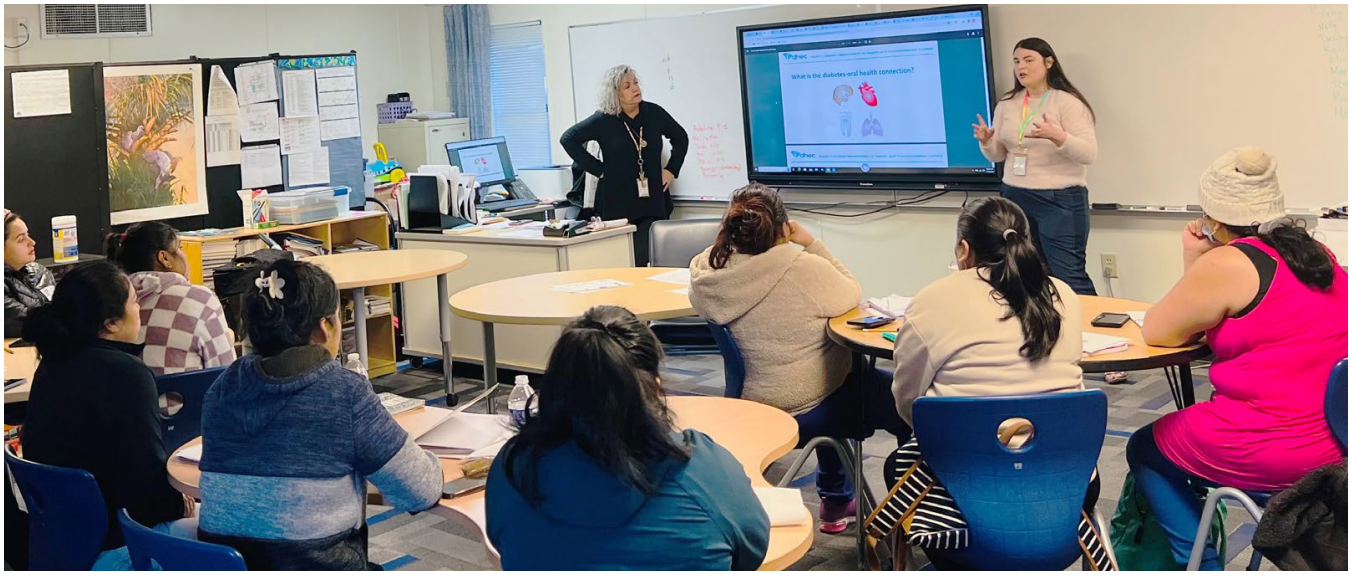
One of the project goals was to strengthen the oral health diabetes network within the four South Carolina Public Health Regions. During the life of this project, the connections made with relevant organizations in the regions increased from 60 to 110. The networks also became more regionalized rather than centralized as the regions expanded their connectivity in their local areas.

external engagement by collaborating with internal partners, embedding oral health and diabetes messaging within the public health regions, and actively strengthening and expanding the oral health statewide network, including the MDI Leadership Team, has made this increased awareness possible. The educational outreach tools that were created as part of the MDI Tool Kit provided the regional outreach teams with information they needed to deliver preventive messages around oral health and diabetes. Additionally, SC DHEC engaged an external evaluation team that supported the project and measured the scope and strength of the Oral Health Diabetes Statewide Network. This evaluation showed that the network increased in engagement, expansion, and complexity over the life of the project. The network also became more diffused and regionalized as the public health regions expanded their local community connections.

Challenges

One of the biggest challenges for the OHD-MDI initiative was the onset of COVID-19

One of the biggest challenges for the OHD-MDI initiative was the onset of COVID-19. All planned outreach at state and regional levels was stopped and meetings were moved to a virtual format. The team was unable to identify FQHCs willing to test the tools that were developed to support the initiative and implement a bi-directional referral system given staffing shortages and competing priorities. However, these challenges became successes as the team shifted its focus from conducting outreach to developing toolkit resources for use by the clinics. The MDI Leadership Team adapted to conducting their quarterly meetings and trainings via a virtual format. Once the pandemic was contained, a clinic partner was identified that could test screening tools, deliver preventive messaging, and track referrals.



> “The MDI initiative in South Carolina was built upon and modeled after other oral health projects that were focused on expanding the reach of oral health beyond one centralized office. As we near the completion of this project, we have momentum and are poised to continue growing the medical-dental integration network in South Carolina.”
>
> -Mary Kenyon Jones, South Carolina Department of Health and Environmental Control

Key Takeaways

This project included updated content, new partners and an ambitious list of deliverables to address the issue of diabetes and oral health in South Carolina.

- Goal setting and developing strategic workplans that included all partners both internal and external (SC DHEC staff, public health region staff, and the MDI Leadership Team) helped to maintain project engagement, focus, and accountability.
- Evaluation helped support the project and provided necessary data to inform and shape the direction of the initiative.

Future Opportunities

The MDI Oral Health Diabetes project was successful in strengthening and expanding the oral health network in South Carolina and synergized efforts around medical-dental integration with a focus on diabetes. Lessons learned from the clinic pilot site, including the testing of screening and referral tools and the dual language resources, will help guide future projects. Efforts will continue as funding becomes available. Project successes will be catalogued and shared through the SC Oral Health Action Network to promote and support project sustainability.

Partnering with Free and Charitable Clinics to Increase Access to Care

Despite the known link between oral health and overall health, traditional medical and dental services continue to function independently, leading to disjointed care and poor patient outcomes. Virginians often have access to medical care but are unable to obtain necessary dental care and might not understand oral health's connection to overall health. The opportunity for collaboration and inter-professional care coordination can improve care for all patients, especially those struggling with chronic diseases such as hypertension.

Approach/Partners

The Virginia Department of Health, Dental Health Program (VDH DHP) partnered with the Virginia Association of Free and Charitable Clinics to identify safety net sites statewide in Virginia that were able to implement medical-dental integration activities around hypertension. Activities included working with both dental and non-dental healthcare providers on awareness of oral health as it relates to overall health, tobacco control and bi-directional referral systems. VDH DHP staff led this effort by providing training and educational materials to support the implementation of standardized blood pressure screenings and medical referrals by dental providers and routine oral cavity examinations and dental referrals by non-dental providers. Community health workers (CHW) were also used on both the dental and medical sides to support patient education and referrals for care. While VDH DPH initially tried to engage with individual clinics, they settled on a regional cohort of medical clinics that work with a dental clinic. In addition to working with the clinic sites, VDH DHP partnered internally with their Chronic Disease and Tobacco Control programs to address similar grant deliverables and extend the messaging about oral health to the VDH DPH funded chronic disease programs. They also partnered externally with CHW training programs to include oral health topics from the *Smiles for Life* online curriculum within the approved curriculum for CHW

Virginia Clinic Partners

- Free Clinic of Culpeper
- Orange County Free Clinic
- Madison Free Clinic
- Fauquier Free Clinic
- Piedmont Regional Dental Clinic

> "As a dental program, we have primarily made partnerships outside of dental clinics or groups to guide this work which has helped to change the traditional thinking and roles of healthcare providers."
>
> -Pam Blankenship, Virginia Department of Health

Medicaid Expansion: Making oral health services attainable

Virgina Health Catalyst, with support from the VDH and other partners, successfully advocated to expand Medicaid coverage eligibility and include a dental benefit. As a result, more than 300,000 Virginians became eligible for dental coverage in 2018. Some clients of Virginia clinic partners were able to utilize this benefit during the project period.

certification and with Virginia Health Catalyst also has an interest in promoting MDI with clinic partners across the state.

Successes

The project's most sustainable success has been creating unique partnerships and collaborations. As a dental program, VDH DPH has primarily made partnerships outside of dental clinics or groups to guide this work which has helped to change the traditional thinking and roles of healthcare providers. Partnering internally with chronic disease and tobacco has led to the inclusion of oral health within these programs. The focus on free and charitable clinics individually has grown into support from the Virginia Association of Free and Charitable Clinics, leading to replication in other clinics across Virginia. The cohort of clinics working together, sharing staff, knowledge, and lessons learned, has led to a group that is incredibly supportive of one another and has resulted in better outcomes than those clinics approaching this work individually. Within the medical clinics, oral screenings have been incorporated into routine patient assessments. Medical providers have been very appreciative of tools and appreciate "being better prepared" to address dental emergencies, recognize potential areas of concern (oral cancer), and have a better understanding of how to prioritize referrals to dental providers. In the dental clinic, taking blood pressure has become standard practice resulting in some patients becoming involved with self-monitoring of their blood pressure.

> "Patient teaching handouts regarding blood pressure in English and Spanish have been helpful, and sparked healthy conversations about chronic disease management."
>
> -Fauquier Free Clinic

The involvement of CHWs in both the medical and dental clinics, assisting with oral health and chronic disease education and providing referrals for care and other resources, has improved patient access and complement and builds staffing within clinics. The CHWs have been very engaged in the MDI work and have been extremely interested in receiving oral health information and resources. The addition of oral health topics into the curriculum required for CHW certification has resulted in normalizing the discussion of oral health between CHWs and their patients.

> “The disease affecting teeth is almost entirely preventable. Checking the progress of the disease requires preventive oral health and periodic visits to a dentist. This is the best kind of training under oral health I have ever attended.”
>
> -CHW training attendee

Project Successes

895

patients have received an oral screening during a medical visit with 195 referred for needed dental services

3,687

patients have received blood pressure screening during a dental visit with 123 referred for hypertension management

459

CHWs have been trained on oral health topics including resources and referrals

Challenges

While VDH DPH initially engaged individual clinics for this project, the COVID-19 pandemic resulted in the redirection of staff resources and in some cases, the closure of clinics. The resulting staff turnover led to reduced buy-in for participation. Existing requirements, protocols and time allotment within clinics created barriers to adding additional screenings and referrals to workflows. Additionally, interest in oral health and screening among non-dental providers varied across clinics.

> “Patients are so thankful when we are able to not only go over the risks of HBP with them, but also give them a monitor to take home, along with the card to track it themselves – something that they would otherwise not have access or the ability to do. They feel truly cared for as we are going over total body health and not just oral care.”
>
> -Piedmont Regional Dental Clinic

Key Takeaways

Build on what is already working by collaborating with existing programs doing similar projects:

- VDH internal partners shared resources, messaging, and educational materials.
- Community Health Worker (CHW) Movement in Virginia: CHWs can play a vital role in successful bi-directional referrals as well as chronic disease education and resources.

It is not as easy as it sounds on paper.

- It takes longer to engage clinic providers than you might think.
- Support and engagement at the clinic level is needed from all involved. Without engagement from administrative staff (starting with the executive director) down to front line clinical staff, success is limited.

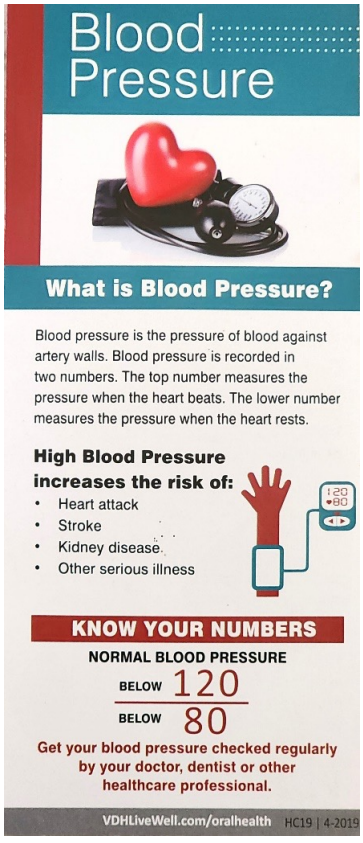
Partnerships are vital to success.

- Medical and Dental Professional Associations as well as programs within the state health department are crucial to success.
- Think "outside the box" when looking at partnerships–be creative.
- On a conversational level it seems straightforward, but putting it into practice is more challenging.

Future Opportunities

Partnership with other programs within VDH including the Chronic Disease and Tobacco Control programs are encouraging sustainability of the current work as demonstrated by the inclusion of oral health in the workplans of new grant cycles. The cohort model for free and charitable clinics has been successful and through VDH partnership with the Virginia Association of Free and Charitable Clinics, there are plans to expand to additional clinics throughout Virginia.

> "This project has contributed greatly to the conversation of MDI for adults within Virginia. The first few years laid a solid foundation and served to provide education and 'planting seeds' for this work."
>
> -Virginia Health Catalyst



Key Takeaways from CDC DP18-1810 – Component 2 States

Lessons learned from states:

Data informs and drives program.

It is important to build on existing partnerships and to not be afraid to create new ones.

This work is not easy – it takes time and dedication.

This work is not about numbers – (although they're important) – it's about transforming health systems and thinking differently about approaches to implementing whole person integrated care.

Regardless of how states approached their projects, all of the states worked several if not all of the pillar areas outlined in the Medical-Dental Integration (MDI) Framework:

Awareness

States increased awareness about the link between oral health and chronic diseases and risk factors developing messaging for a variety of target audiences (consumers and health professionals). They used state-based data to inform their awareness building messages and tailored those messages for high-risk populations.

Workforce Development and Operations

States provided training to clinicians that included how to properly take blood pressure readings, how to use the prediabetes risk assessment tool, and how to use motivational interviewing techniques to identify patient readiness to be evaluated for their diabetes risk. They also trained primary care providers on how to conduct oral health assessments using evidence-based resources such as the "Smiles for Life" curriculum.

Information Exchange

States provided sample workflows and clinical quality indicator measures to help their clinic partners establish and operationalize changes to support bi-directional referrals between primary care and dental. Several clinics developed information technology solutions to facilitate sharing of patient information between primary care and dental. However, verification and follow up was a challenge when patients were referred from a dental provider to primary care, especially if it was outside of that particular health system.

Payment

States worked to address issues related to reimbursement and the need for payment incentives to support the inclusion of additional screenings in primary care and dental. Most of the clinic partners were a FQHC or free and charitable clinic, reimbursement for these pilot sites was less of an issue. However, due to lack of capacity not all referrals from medical to dental in several of the clinics could be accommodated. Additionally, the loss of funding to support embedding a dental hygienist in a pediatric medical clinic resulted in lack of capacity to continue oral health screenings and patient education once the funding ended.

For states who are considering undertaking similar work, consider the following:

States that are considering undertaking similar work can learn from the approaches and successes taken by the DP18-1810 Component 2 states in addition to the approaches that were taken by the six states funded by CDC under DP-16-1609 from 2016 to 2018.[3]

1. Bring program leaders and staff together

Once a decision has been made to explore how oral health and chronic disease programs within the State Health Department (SHD) can work together, the next step is to bring program leaders and staff together to discuss how mutually shared goals and targeted outcomes can benefit from a coordinated approach. In some states this conversation is easier to facilitate, particularly when the oral health program sits in the same unit as the chronic disease program. However, in SHDs where the oral health program is not located in the same unit as the chronic disease program, this type of collaboration can be more difficult.

2. Secure funding sources

Funding streams are also a challenge and a barrier that prevents collaboration between oral health and chronic disease programs. Historically, chronic disease programs in SHDs have been funded categorically. While they may share similar approaches to program implementation and work to mitigate similar risk factors for their specific chronic disease focus areas (e.g, cardiovascular disease, diabetes, arthritis, cancer, etc.), funding sources can hamper efforts to collaborate. Unfortunately, large and well-funded chronic disease programs often overlook the value that oral health programs can bring to the table, thus positioning the oral health program and the clinic providers they can activate as an underutilized partner in screening for chronic disease risk factors such as prediabetes, hypertension, and tobacco use. The scientific literature clearly confirms the role that oral health providers can play in supporting primary care providers and their teams in identifying and referring patients with chronic disease risk factor for follow up assessments and care.[4,5] This is particularly true when SHDs are focused on preventing and controlling chronic diseases in high-risk populations and in states/communities where safety net primary care providers are at capacity.

[3] *Linabarger M, Brown M:, Patel N. A pilot Study of Integration of Medical and Dental Care in 6 States. Prev Chronic Dis 2021;18:210027. DOI: https//doi.org/10.5888/ped18.210027.*

[4] *Simon L, Lamster I. Integration of Primary and Oral Health Care—An Unrealized Opportunity. JAMA Intern Med. Published online June 24, 2024. doi:10.1001/jamainternmed.2024.2267*

[5] *Returning the Mouth to the Body: Integrating Oral Health & Primary Care | Grantmakers In Health https://www.gih.org/files/FileDownloads/Returning_the_Mouth_to_the_Body_no40_September_2012.pdf*

3. Use data to identify priorities

The states that were funded under DP18-1810 used data to identify the chronic disease priorities they wanted to work on and built on their existing partnerships and state and community assets to develop an approach that was appropriate for their state. Over time, several states developed workplans between their oral health and chronic disease programs that braided funding and shared staff and other SHD resources. They coordinated their disease prevention and health promotion messaging and partnerships and identified mutually shared goals for chronic disease risk factor reduction (diet, tobacco use, hypertension and prediabetes screening, and blood pressure and A1C monitoring).

4. Clinical partners can help build awareness

When engaging with clinical partners, helping them to identify and establish bi-directional referral relationships is a critical first step in the process to ensure that patients can be properly managed and followed. Information exchange is important and overcoming the fact that electronic medical and dental records do not always communicate with each other, particularly when they are not in the same health system, is a huge barrier. Awareness building and trainings on the relationship between oral health and chronic disease needs to happen early in the process. Developing tools and resources to support clinic workflows is also important. Finally, identifying and addressing payment and reimbursement barriers will ensure that clinicians are sufficiently incentivized to conduct additional screenings and assessments.

The lessons learned from the approaches taken by the five DP-18-1810 Component 2 states can serve as a springboard for other states interested in building a bridge between oral health and chronic disease programs. Because of the relationship that poor oral health has on managing an array of chronic diseases, combined with the shared risk factors that impact poor oral health and chronic diseases such as cardiovascular disease, diabetes, and obesity, state oral health programs and their clinic and coalition partners are logical allies in a shared quest for improving the health of the public and promoting the concept of whole person integrated care.

APPENDIX

General Information and Resources

Within this section, there are resources including white papers, peer-reviewed articles, and toolkits that may be helpful to individuals and organizations that would like to learn more about or implement projects to advance oral medical care coordination (also known as medical-dental integration).

Advancing Oral Health Prevention in Primary Care Driver Diagram and Change Ideas.

This resource includes information on QI projects related to oral health and primary care. There are resources and evidence and case studies for each of the change activities detailed in this toolkit.

https://www.medicaid.gov/media/163046

CareQuest Institute for Oral Health. Missed Connections: Providers and Consumers Want More Medical-Dental Integration Collaboration. Boston, MA; February 2022.

This resource is a summary of the State of Oral Health Equity In America survey data, fielded in 2021 that is relevant to oral medical care coordination.

https://www.carequest.org/system/files/CareQuest_Institute_Missed-Connections-Providers-and-Consumers-Want-More-Medical-Dental-Integration_FINAL.pdf

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Community Oral Health Transformation (System Transformation: A Three Domain Framework to Innovating Oral Health Care)

This CareQuest Institute for Oral Health website contains information about value-based care, including tools,resources, and case studies.

https://www.carequest.org/how-we-work/health-improvement-programs/corht

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Delta Dental Institute. Medical- dental integration models: A critical review of the last decade.

In this white paper, the authors describe approaches to medical-dental integration, address challenges and barriers to MDI as well as solutions. They also evaluate the sustainability of MDI.

https://dental.cuanschutz.edu/docs/librariesprovider253/research/uco_mdi_white_paper.pdf?sfvrsn=cdfc6abb_2

Acharya, A. (2016) Marshfield Clinic Health System: Integrated Care Case Study, Journal of the California Dental Association, 44:3, 177-181, DOI: 10.1080/19424396.2016.12220991

This case study describes an integrated medical-dental care delivery model employed within the Marshfield Clinic Health System; a large health system located in rural Wisconsin.

https://www.tandfonline.com/doi/f/10.1080/19424396.2016.12220991?needAccess=true

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McKernan, S. C., Kuthy, R. A., Reynolds, J.C,, Tuggle, L., , and García, D. T. (2018). Medical-Dental Integration in Public Health Settings: An Environmental Scan

In this report, the authors describe examples of medical-dental integration in the United States and includes information about clinical and non-clinical approaches to integration, address challenges to implementation and offer recommendations for future direction.

https://ppc.uiowa.edu/sites/default/files/ced_environmental_scan.pdf

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Medical/Dental Integration Tool Kit. Northeast Delta Dental.

This website has tools and resources that may be helpful to healthcare providers as they address oral health, blood pressure and diabetes with their patients. https://www.nedelta.com/providers/resources/medical-dental-integration-tool-kit/

https://www.nedelta.com/providers/resources/medical-dental-integration-tool-kit/

MORE Care: Medical Oral Expanded Care. CareQuest Institute for Oral Health

MORE Care is an initiative of CareQuest Institute to provide oral health competencies and capabilities for primary care. It also works to build referral networks with local dental providers using health information technology. The site has various resources including dashboard, reports and presentations.

https://www.carequest.org/how-we-work/health-improvement-programs/more-care

National Network for Oral Health Access, MDI Resource Page

This National Network for Oral Health Access site has large number of resources specific to medical/dental integration including best practices, guides to core clinical competencies, an oral health integration toolkit and information on partnerships.

https://www.nnoha.org/pages-1/resources-%7C-access-to-care-%7C-integration-%7C-medical-%26-dental-integration

100 Million Mouths Campaign

The 100 Million Mouths Campaign is an initiative of the Harvard University, Center for Integration of Primary Care and Oral Health, funded by CareQuest Institute that aims to create an oral health champion in each state to work with health professional schools to integrate oral health training into their curricula.

https://cipcoh.hsdm.harvard.edu/one-hundred-million-mouths-campaign

Oral Health: An Essential Component of Primary Care: Qualis Health - White Paper.

This white paper and supporting documentation including an introductory video and case studies present a framework for integrating preventive oral healthcare within the primary care team and offers recommendations for stakeholders including payers, policymakers and educators on how to support this framework.

https://www.qualishealth.org/sites/default/files/White-Paper-Oral-Health-Primary-Care.pdf

Oral Health Integration

This Safety Net Medical Home Initiative site has resources to help implement the Oral Health Delivery Framework described in Oral Health: An Essential Component of Primary Care: Qualis Health.

https://www.safetynetmedicalhome.org/change-concepts/organized-evidence-based-care/oral-health

Oral Medical Care Coordination: A Systematic Literature Review and Guide Forward.

https://chronicdisease.org/oral-medical-care-coordination-a-systematic-literature-review-and-guide-forward/

The Primary Care Collaborative. (January 2021). Innovations in Oral Health and Primary Care Integration: Alignment with the Shared Principles of Primary Care.

This resource includes a report on the various ways that oral health can be integrated into primary care. The site also includes slides and a video that briefly cover the report content.

https://thepcc.org/resource/innovations-oral-health-and-primary-care-integration

The Primary Care Collaborative. Putting the Mouth Back in the Body: Integrating Oral Health and Primary Care Webinar recording, March 21, 2019

This is a webinar recording discussing oral health and primary care integration.

https://thepcc.org/webinar/putting-mouth-back-body

Resource Library for the Integration of Oral Health and Medicine

This is a library of resources relevant to integration of oral health and primary care. It includes information about stakeholders working to advance integration of oral health and medicine, promising practices, toolkits/guides/training resources, peer-reviewed publications and media related to oral/medical integration.

https://resourcelibrary.hsdm.harvard.edu/

Returning the Mouth to the Body: Integrating Oral Health & Primary Care | Grantmakers In Health

In this issue brief, the authors make the case for integration of oral health and primary care and provide recommendations where grant makers can be involved in this work.

https://www.gih.org/files/FileDownloads/Returning_the_Mouth_to_the_Body_no40_September_2012.pdf

Simon L, Lamster I. Integration of Primary and Oral Health Care—An Unrealized Opportunity. *JAMA Intern Med.* Published online June 24, 2024.

This viewpoint paper discusses using interdisciplinary teams including both dentists and primary care providers to improve primary care for patients.

doi:10.1001/jamainternmed.2024.2267

Smiles for Life: A National Oral Health Curriculum

The Smiles for Life curriculum has eight modules that provide training on oral health that are relevant to health professionals. The site also has additional resources including toolkits, publications, and videos.

https://www.smilesforlifeoralhealth.org/

The following sections contain resources specific to the themes or 'pillars' identified within the white paper, *Oral Medical Care Coordination: A Systematic Literature Review and Guide Forward* as necessary to move oral medical care coordination forward.

Awareness

Increase understanding about integrated care and the oral-systemic connection across the lifespan.

The Awareness pillar focuses on increasing recognition, knowledge, understanding, and perception about equitable, whole-person integrated care, as well as the oral-systemic connection across the lifespan. This pillar involves efforts to educate healthcare professionals, patients, and the general public about the critical role of oral health in overall health and the benefits of integrated oral medical care coordination.

CareQuest Institute for Oral Health. Beyond a Nice Smile: Links Between Oral Health and Overall Health for Older Adults. Boston, MA: CareQuest Institute, May 2023

This infographic series provides the reader with information on the links between oral health and overall health. Versions are included for patients and providers

https://www.carequest.org/resource-library/beyond-nice-smile

CareQuest Institute for Oral Health. The Oral-Systemic Connection Across the Lifespan. Boston, MA; June 2023.

This resource includes information about the connection between oral health and overall health across the lifespan. Both an infographic and a video that discuss this connection are available.

https://www.carequest.org/resource-library/oral-systemic-connection-across-lifespan

Medical-Dental Integration | CareQuest Institute for Oral Health

This CareQuest Institute site houses information about the link between oral health and overall health, makes the case for medical-dental integration and provides links to additional resources.

https://www.carequest.org/topics/medical-dental-integration

Medical-dental integration emphasizes mouth-body connection | American Dental Association (ada.org)

This resource by the American Dental Association describes medical-dental integration work.

https://adanews.ada.org/ada-news/2022/october/medical-dental-integration-emphasizes-mouth-body-connection

Workforce Development and Operations

Empower care professionals and others to work across disciplines to establish organizational structures supporting whole-person integrated care.

The Workforce Development and Operations pillar focuses on preparing and enabling healthcare professionals to work across disciplines, establishing organizational structures to facilitate collaboration, and empowering staff to use systems that support whole-person integrated care. This pillar emphasizes the importance of interprofessional education (IPE), continuous training, and the creation of integrated care models that include both medical and dental professionals.

Braun PA, Chavez C, Flowerday C, Furniss A, Dickinson M. Embedding Dental Hygienists into Medical Care Teams: Implementation and evaluation of a medical-dental integration approach in Colorado. J Dent Hyg. 2023 Jun;97(3):21-27. PMID: 37280106.

This case report describes a medical-dental integration project in Colorado. As part of the project, dental hygienists were embedded into medical practice settings. Both implementation and evaluation are discussed.

https://pubmed.ncbi.nlm.nih.gov/37280106/

Clinical Models that Integrate Medical and Dental Care

This Harvard University site has information on models that integrate medical and dental care including an ongoing project that integrates a nurse practitioner into a dental practice setting.

https://oralhealth.hsdm.harvard.edu/clinical-practice

Midwest Network for Oral Health Integration: Community Health Worker Care and Coordination Best Practices

This resource provides information on the use of community health workers to support oral health integration work in community health centers.

https://www.nnoha.org/items-2/community-health-worker-and-care-coordination-best-practices---mnohi

Phipps KR. 2023. Networks for Oral Health Integration (NOHI) Within the Maternal and Child Health Safety Net: Environmental Scan 2023 Chartbook. Washington, DC: National Maternal and Child Oral Health Resource Center.

This resource discusses the Networks for Oral Health Integration (NOHI) Within the Maternal and Child Health Safety Net Projects funded by the Health Resources and Services Administration's (HRSA's) Maternal and Child Health Bureau (MCHB) to develop, implement and evaluation models of care. It includes information on oral health scope of practice for medical providers and their teams and for dental providers among funded states. There is also information on how dental hygienists, dental therapists and community health workers are utilized in dental and medical settings.

https://resourcelibrary.hsdm.harvard.edu/sites/hwpi.harvard.edu/files/hsdmresourcelibrary/files/nohi-environmental-scan-chartbook-2023.pdf?m=1699328214

Information Exchange

Create structures to share meaningful and actionable health information to support patient care.

The Information Exchange pillar is the sharing and promotion of access to meaningful and actionable information (e.g., patient, practice, research, population) to enable whole-person integrated care. This pillar emphasizes the importance of using technology and communication strategies to facilitate seamless information flow between medical and dental professionals, improving the coordination and quality of care provided to patients.

Dental Data Exchange: HL7® Implementation Guides

This CareQuest resource has guides to implementing electronic exchange of patient data between medical and dental settings. There is also an introductory video and several other resources documents specific to information exchange.

https://www.carequest.org/resource-library/dental-data-exchange-hl7-implementation-guides

Medical-Dental Integrated Health Records | CareQuest Institute

This report from CareQuest makes the data-driven case for integrating dental and medical electronic health records.

https://www.carequest.org/resource-library/medical-and-dental-integration-need-improved-electronic-health-records

A User's Guide for Implementation of Interprofessional Oral Health Core Clinical Competencies: Results of a Pilot Project

This resource is a user guide for the integration of oral health and primary care. It includes information on implementation including case studies and promising practices.

https://www.nnoha.org/pages-1/resources-%7C-access-to-care-%7C-integration-%7C-medical-%26-dental-integration (main resource site)

https://drive.google.com/file/d/1Ms5EF918NvHvdxnkSaJdIEH-YkhNvkcp/view (direct link to the document)

Payment

Establish sustainable financing, reimbursement, and incentives to support optimal health outcomes.

The Payment pillar is the component of integrated care that focuses on establishing sustainable financial models and reimbursement structures that incentivize and support the delivery of coordinated medical and dental services. This pillar emphasizes the creation of payment systems that reward value and patient outcomes rather than the volume of services, while ensuring that providers are financially supported in offering comprehensive, integrated care.

Center for Healthcare Strategies, Inc. Moving towards value-based payment in oral health care

In this brief report from the Center for Healthcare Strategies, the authors summarize value-based care models, discuss use of value-based care for oral health and provide recommendations for stakeholders.

https://www.chcs.org/media/Moving-Toward-VBP-in-Oral-Health-Care_021021.pdf

Colorado MDI toolkit- Billing

This site provides information on billing for dental hygiene services in support of a medical-dental integration model.

http://medicaldentalintegration.org/building-mdi-models/billing/

Lisa J. Heaton, Elizabeth Leonin, Kelly Schroeder, Eric P. Tranby, and Rebekah Mathews. Another Billion Reasons for a Medicare Dental Benefit.

Boston, MA: CareQuest Institute, September 2022. DOI:10.35565/CQI.2022.2006

This report by CareQuest Institute for Oral Health provides examines the cost savings to Medicare when beneficiaries who have diabetes or cardiovascular disease have access to periodontal treatment.

https://www.carequest.org/system/files/CareQuest_Institute_Another-Billion-Reasons-Medicare.pdf

Diabetes and Hypertension

This section provides both provider and patient focused educational materials on diabetes, hypertension, and oral health.

ADA: Diabetes and dental health

https://www.mouthhealthy.org/all-topics-a-z/diabetes/

ADA: Heart disease and oral health

https://www.mouthhealthy.org/all-topics-a-z/heart-disease-and-oral-health/

ADA: Hypertension

https://www.ada.org/resources/ada-library/oral-health-topics/hypertension/

Diabetes Mellitus & Oral Health | Aetna Dental

https://www.aetna.com/individuals-families/dental-health/diabetes-oral-health.html

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Oral Health Care and Primary Health Care: Stronger Together in Recognizing and Managing Diabetes

https://resourcelibrary.hsdm.harvard.edu/sites/hwpi.harvard.edu/files/hsdmresourcelibrary/files/adea_integration_of_oral_and_primary_health_care_policy_research_series_issue_5.pdf?m=1648917365

Select State Resources

This section provides select resources developed by states that have implemented projects to advance oral medical care coordination (also known as medical-dental integration).

Linabarger M, Brown M, Patel N. A Pilot Study of Integration of Medical and Dental Care in 6 States. Prev Chronic Dis 2021;18:210027. DOI: http://dx.doi.org/10.5888/pcd18.210027

This paper describes the results of the CDC pilot project, Models of Collaboration that funded six state health departments (AK, CO, GA, MD, MN, and NY) to increase collaboration between programs to address oral health, chronic disease and associated risk factors.

https://www.cdc.gov/pcd/issues/2021/21_0027.htm

Connecticut

For more information on the CT medical-dental integration project or to request a copy of their Prediabetes Screening Toolkit for Dental Providers

https://portal.ct.gov/dph/oral-health/oral-health/office-of-oral-health/medical-dental-integration

Video on the importance of medical-dental integration

https://www.youtube.com/watch?v=JF9OjaAQbdc

Colorado

Continuous Quality Improvement Portfolio: Activities to Improve Medical-Dental Integration

https://coloradooralhealth.org/initiatives/oral-health-integration/

Embedding Dental Hygienists into Medical Care Teams: Implementation and evaluation of a medical-dental integration approach in Colorado | Journal of Dental Hygiene (adha.org)

https://jdh.adha.org/content/97/3/21

Katya Mauritson, Sara Grassemeyer, Ian Danielson & Abby Laib (2022) Integrated Approaches to Preventing and Managing Chronic Diseases: Colorado's Diabetes Cardiovascular Disease Oral Health Integration Program, Journal of the California Dental Association, 50:12, 733-744, DOI: 10.1080/19424396.2022.12223825

Oral Health Integration: A manual from the Colorado Community Health Network

https://cchn.org/wp-content/uploads/2014/02/CCHN-OHI-Manual-August-2015-Final-Digital-Distribution.pdf

Iowa

I-Smile Silver

I-Smile Silver connects adults living in 10 Iowa counties with dental, medical, and community resources.

https://hhs.iowa.gov/programs/programs-and-services/dental-and-oral-health/i-smile-silver

Maryland

Models of Collaboration for State Chronic Disease and Oral Health Programs in Maryland: Hypertension Screening in the Dental Setting, Sept. 1, 2016 – Aug. 31, 2018

https://health.maryland.gov/phpa/oralhealth/Documents/HypertensionFinalReport.pdf

2 Minutes With Your Dentist Can Save Your Life

https://health.maryland.gov/phpa/oralhealth/Pages/hypertension.aspx

Massachusetts

Integrating Oral Health Across Healthcare | Mass.gov

https://www.mass.gov/info-details/integrating-oral-health-across-healthcare

Michigan (HBP)

Hypertension Screening Guidance for Michigan Oral Health Professionals

https://www.mass.gov/info-details/integrating-oral-health-across-healthcare

Improving Access to Oral Health Care: Integrating dental hygienists into federally qualified health center obstetrics and gynecology clinics in Michigan | Journal of Dental Hygiene (adha.org)

https://jdh.adha.org/content/97/3/7

Oral Health and Hypertension Success Story

https://www.improve.health/success-stories/oral-health-and-hypertension-success-story/

MDHHS Summary of Michigan Assessment of Blood Pressure and Diabetes Screening Practices among Oral Health Professionals Report

https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder2/Folder27/Folder1/Folder127/BPDiabetes_OH_Assessment_Summary_1016.pdf?rev=51c890bf042c46858661b951637ce681

North Dakota

Improving Access to Oral Health Care: Integrating dental hygienists into federally qualified health center obstetrics and gynecology clinics in Michigan

https://www.hhs.nd.gov/health/oral-health-program/blood-pressure-screening-dental-offices

Blood Pressure Measurement in Dental Practice: Information and Guidelines

https://www.hhs.nd.gov/sites/www/files/documents/DOH Legacy/Oral Health/Blood_Pressure_Manual-2023.pdf

Blood Pressure Screening at Your Dental Office

https://ruralhealth.und.edu/assets/4413-19142/blood-pressure-screening.pdf

How Medical-Dental Integration is Working in North Dakota

https://ruralhealth.und.edu/assets/4616-21383/medical-dental-integration.pdf

South Carolina

Connecting Smiles

The Connecting Smiles initiative aims to improve oral health of the citizens of South Carolina by strengthening the linkage between individuals, community-based programs and medical and dental providers.

www.connectingsmilessc.org

Vermont

Promoting Medical/Dental Health Integration

https://www.healthvermont.gov/wellness/oral-health/resources-health-professionals

Virginia

Smiles for Life- Oral Health and Oral Screening training for Community Health Workers and Non-Dental Clinic Providers and Staff

Course 10 – Front Line Health Workers | Smiles for Life Oral Health

Oral Examination: Adults | Smiles for Life Oral Health

Patient Care and Training Videos | Smiles for Life Oral Health

Oral Health & Hypertension

Oral-HealthHypertension-Card2019.pdf (virginia.gov)

Blood Pressure Wallet Card- English & Spanish

Self-Monitoring Blood Pressure (SMBP) - Heart Disease (virginia.gov)

Free and charitable clinic link

https://www.vafreeclinics.org/

VA Health Catalyst

https://vahealthcatalyst.org/oral-health-integration/

Adult Oral Health and Chronic Disease Program Overview and Training

https://www.vdh.virginia.gov/oral-health/adult-oral-health-and-chronic-disease-program/adult-oral-health-and-chronic-disease-program-overview-and-training/

Wisconsin

Medical-Dental Integration in Wisconsin: Integrating dental hygienists into pediatric well child visits and prenatal care | Journal of Dental Hygiene (adha.org)

https://jdh.adha.org/content/97/3/13

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