Colorado Medical-Dental Integration Wave II Report

Delta Dental of Colorado Foundation

The following content is a series of excerpts from the Colorado Medical Dental Integration Project Evaluation: Denver Health and University of Colorado Combined Final Grant Report, authored by Patricia Braun MD, MPH Project Lead. For a full copy of the report, contact ddcofoundation@ddpco.com.

Throughout it's entirety, the CO MDI project has integrated

43 RDHs

into
33 medical practices

within
27 health care organizations

and provided more than
80,000 dental visits
within medical settings.

Executive Summary

Colorado Medical-Dental Integration (CO MDI) places registered dental hygienists (RDHs) into medical care teams, where RDHs offer full-scope preventive oral health services on-site in medical practices. By integrating the RDHs into the care team, they become part of the health care community and also coordinate referrals to co-located dentists (when available) or outside community dentists to get people the restorative dental care they need.

Delta Dental of Colorado Foundation (DDCOF) has been a leader in testing the integration of dental hygienists into medical practices for the past 14 years. Beginning with the Co-Location of Dental Hygienists into Medical Practices 1.0 Project (2008-2011) and wrapping up with its most recent Colorado Medical Dental Integration Wave II Project (2018-2022), DDCOF's efforts have supported the integration of 43 dental hygienists into 33 medical practices in 27 health care organizations across Colorado.

The evaluation of DDCOF's integration of dental hygienists into medical practices efforts demonstrates that this approach is feasible(3), its implementation is facilitated by specific practice factors, and while barriers exist to this new health care delivery approach, these barriers are largely surmountable in the right settings(4).

This report summarizes the implementation and evaluation of the Colorado Medical Dental Integration Wave II Project, funded by the Delta Dental of Colorado Foundation (DDCOF). The results support that integrating dental hygienists into medical practices:

- Expands access to dental care for both children and adults
- Improves their oral health
- Can be financially solvent in the right settings.

This medical-dental integration approach is starting to expand across the country and is a realistic mechanism to support the U.S. Surgeon General's Framework for Action by integrating oral health into overall health and removing known barriers between people and oral health services. Ultimately, integrating dental hygienists into medical care teams stands to reduce barriers to equitable oral health care, and by doing so, promotes health equity.

This report summarizes the implementation and evaluation of the CO MDI Wave II Project, funded by Delta Dental of Colorado Foundation.

Background

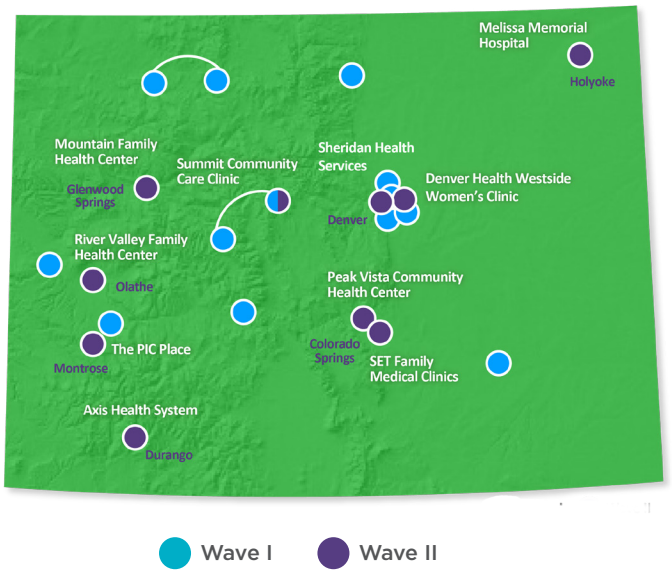
Wave II of the CO MDI Project was built on the evaluation of the Co-Location of Dental Hygienist into Medical Practices 1.0 Project (2008-2011)(3) and the CO MDI Wave I Project (2015-2019)(4), both also funded by the DDCOF. The former Co-Location project tested the feasibility of co-locating dental hygienists into five medical practices in Colorado, and the latter CO MDI Wave I project fully integrated dental hygienists into an additional 16 medical practices (Fig. 1. CO MDI map). A product of the evaluation of the aforementioned projects included the CO MDI Change Package (Fig. 2. CO MDI Change Package) which identified the key changes or "drivers" practices need to implement for MDI success.

The goal of the CO MDI Wave II Project was to scale-up the formative medical-dental integration model and implement the CO MDI Change Package into 10 additional Colorado medical practices (Fig.1. CO MDI map), and by doing so, increase access to dental services for vulnerable populations in Colorado to improve their oral health.

The primary objectives of the CO MDI Wave II Project were to:

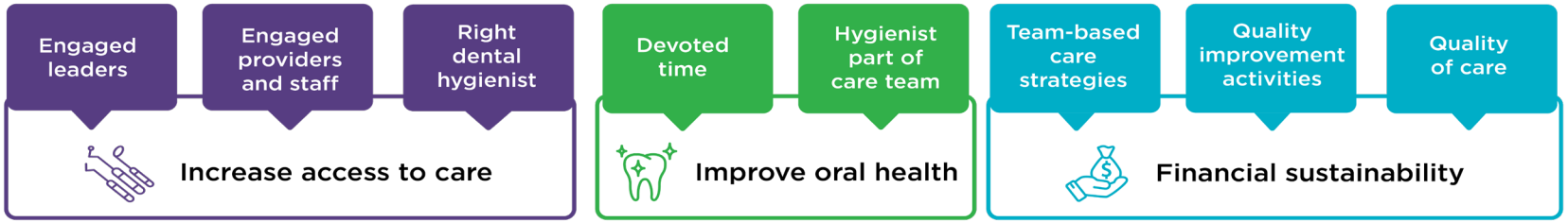
1. Increase access to evidence-based dental care via 32,000 patient visits over four years.
2. Improve oral health by decreasing the prevalence of active decay in the target population by 10% over four years.
3. Develop financially solvent business models in 75% of participating practices over four years.

Figure 1: CO MDI map



These objectives align closely with Delta Dental of Colorado Foundation's long-term focus of expanding access to oral health care, that services are available to prevent tooth decay and that oral health is recognized as a critical part of overall health care. The project aims to address workforce gaps by supporting innovative models of care; provides direct services to Coloradans facing the greatest barriers to accessing oral health care and prevention services; and creates affordable options for patients. The model – led by RDHs who are trained in oral health prevention and education – also provides critical education and awareness for many caregivers and children on the importance of oral health care.

Figure 2: CO MDI Change Packet



"A change package is an evidence-based set of changes that are critical to the improvement of an identified care process."

improvingchroniccare.org

CO MDI LEARNING COLLABORATIVE

"The Learning Network sessions were extremely valuable to connect with other teams and learn of their successes and deficits. Our coach has been an invaluable support in offering tools & insights to progress forward. She helped to identify gaps and shared experiences of her other teams."

–Grantee response regarding CO MDI Learning Network and Coaching support. Summer 2020

Wave II Timeline

The CO MDI Wave II project utilized the findings from the Co-Location of Dental Hygienist into Medical Practices 1.0 Project and the CO MDI Wave I Project. Specifically, it implemented the Change Package using a practice transformation approach led by a team of subject matter experts, DDCOF staff, and practice transformation coaches.

Start-Up Phase: In early 2018, DDCOF released a request for applications to Colorado medical practices to participate in the project and measure practices' characteristics and capacity to participate.

Implementation Phase I: The CO MDI Learning Collaborative was launched in May 2018. Practices were provided technical support for hiring and/or on-boarding their dental hygienists and building their MDI space within the medical setting. The CO MDI team trained experienced practice transformation coaches from the Colorado Community Health Network (CCHN) and Colorado Regional Health Information Organization (CORHIO) on necessary oral health knowledge needed to support practices. The evaluation team trained practices on collection of oral health metrics and calibrated the integrated dental hygienists on measurement of dental caries and periodontal disease.

Implementation Phase II: Coaches began working with their practices at the end of 2018 and met with their CO MDI teams monthly. The coaches were supported by the subject matter experts and DDCOF team throughout the implementation phase. Teams and leaders came together in-person every 6 months to share best practices, lessons-learned, and gain needed skills and knowledge to implement their MDI model (image: CO MDI Learning Collaborative.) Intensive practice transformation coaching was provided through Spring 2020 using CO MDI quality improvement metrics.

Maintenance Phase: From Spring 2020 through Spring 2022, practices were supported by the CO MDI team with quarterly reviews and targeted coaching to help practices attain full integration. Metrics were collected by the evaluation team through March 2022.

Startup Phase	Implementation Phase		Maintenance Phase	
6 months	6 months	1 year	1 year	1 year
Funding announcement	13-week training	Technical assistance	Wean technical assistance	
Selecting practices	Onboarding hires	Coaching	Reduce coaching	
Executing awards	Learning Network	Quality improvement	Quality improvement ongoing	
Building space	Leadership buy-in	Problem solving	Problem solving	
Hiring hygienist	Provider buy-in	Maintaining buy-in	Maintaining buy-in	
Buying equipment	Building workflows	Improving workflows	Sustainability	
Building teams	Training coaches	Metric maintenance	Evaluate MDI model	
Building metric reports	Metric quality	Evaluate approach/progress	Disseminate findings	

Evaluation Objectives: Deliverables

Objective 1: Provide subject matter expertise and consultation during the request-for-application (RFA) process, readiness assessments of practice applicants, and practice selection.
Deliverable: *Completed*

Objective 2: Provide subject matter expertise and faculty support to CO MDI startup activities.
Deliverable: *Completed*

Objective 3: Provide subject matter expertise for "Lunch-and-Learns." Deliverable: *Completed*

Objective 4: Provide subject matter expertise and faculty support to practice coaching activities as subject matter expert and coaching faculty. Deliverable: *Completed*

Objectives 5-8: Direct and oversee evaluation of **7 CO MDI Project objectives**. Deliverable: *Completed*

1. Provide 32,000 dental hygiene visits over 4 years (2019-2022).
2. Provide dental sealant to >75% of eligible patient visits.
3. Provide fluoride varnish to >75% of eligible patients.
4. Reduce the proportion of CO MDI patient encounters with reported "last dental visit" > 12 months by 10 percentage points.
5. Objective 5. Describe sociodemographic characteristics of CO MDI patients-visits.
6. Objective 6. Reduce the proportion of CO MDI patient encounters with untreated dental decay by 10% (e.g., 50% to 45%).
7. Objective 7. Direct-project revenue will exceed direct-cost expenses in >75% of CO MDI practices.

Objective 9: Dissemination of CO MDI Wave II findings at local, regional, and national meetings. Objective 9 was completed with dissemination of CO MDI Wave II findings at local, regional, and national meetings including 13 invited presentations, two competitive presentations, and one peer-reviewed presentation. Deliverable: *Completed*

CRITICAL DIAGNOSIS SPURRED BY DENTAL VISIT

Peak Vista Community Health Center

A two-year-old girl had a visit for bleeding associated with teething. Through my examination, I determined the bleeding was not associated with teething because it was spontaneous and coagulating near the gingival margin.

My findings were indicative of systemic involvement. The little girl also had bruises on her body, like she had been beaten with a baseball bat. The mother showed me pictures of the crib sheet that had large amounts of blood. For teething, I would have expected to see a few drops to nothing at all, so I knew this was not from teething.

I told Dr. Leonard my findings, and she went in to examine the patient and referred her out for bloodwork. A few days later, the results came back, and the patient had leukemia. The collaborative, integrated work helped to diagnose and treat the little girl more quickly.

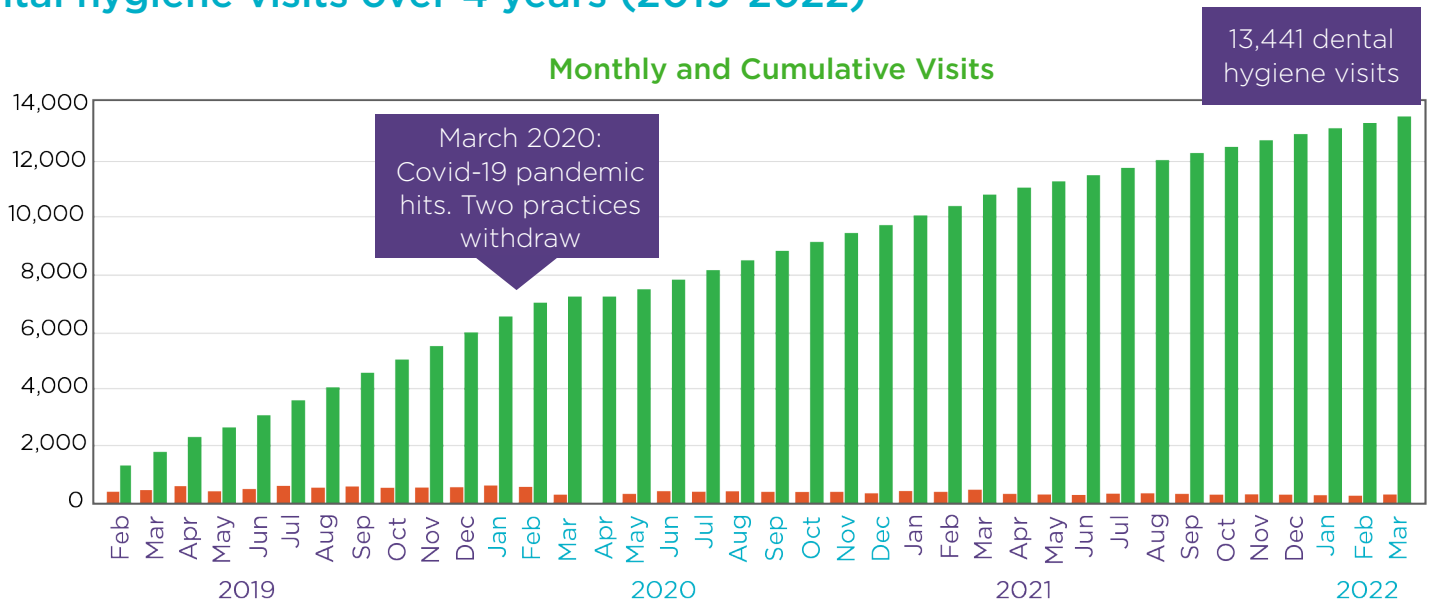
- Elizabeth Flores, RDH

Wave II Project Objectives

Objective 1. Provide 32,000 dental hygiene visits over 4 years (2019-2022)

Between September 1, 2018 and March 31, 2022, CO MDI practices provided 13,441 CO MDI dental hygiene visits. The CO MDI Project fell short of reaching this objective due to major factors including:

- CO MDI Wave II practices were generally small which impacted productivity.
- The COVID-19 pandemic had a major impact on the project resulting in 3 practices leaving the project.
- A few practices were challenged at finding the right dental hygienist which slowed down start-up activities.



9,329 caries risk assessments

2,882 scaling and root planing

1,391 dental sealants

5,465 X-rays

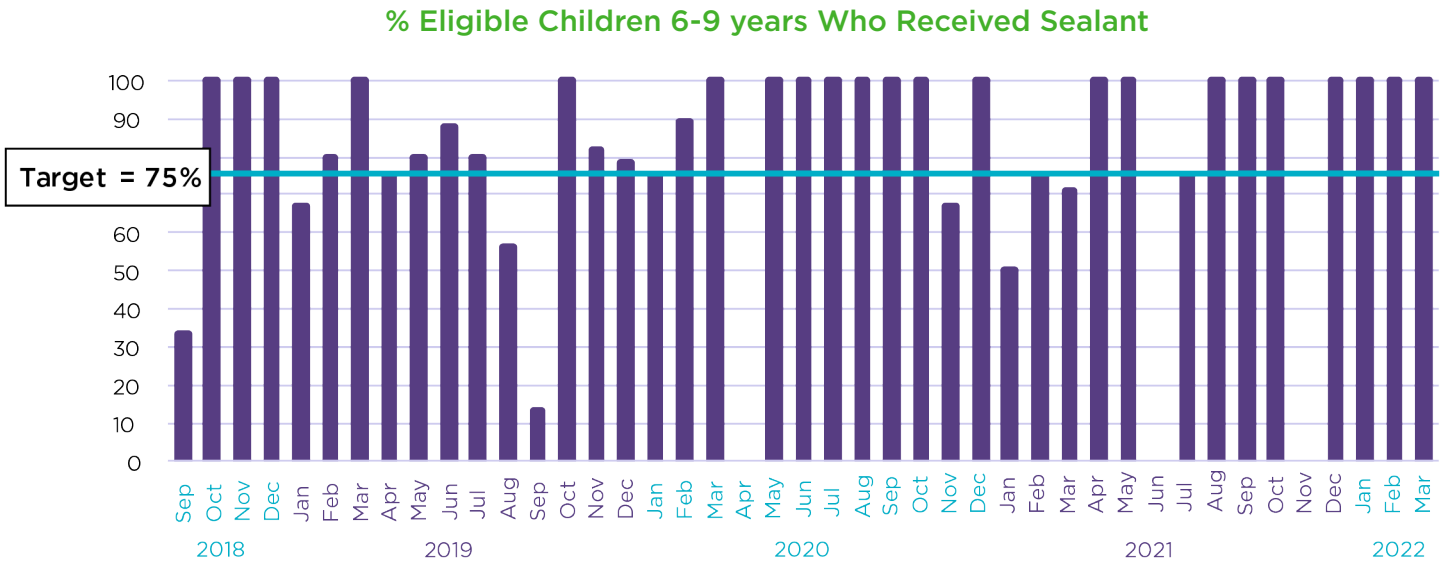
6,722 fluoride varnish applications

5,161 dental cleanings

382 silver diamine fluoride treatments

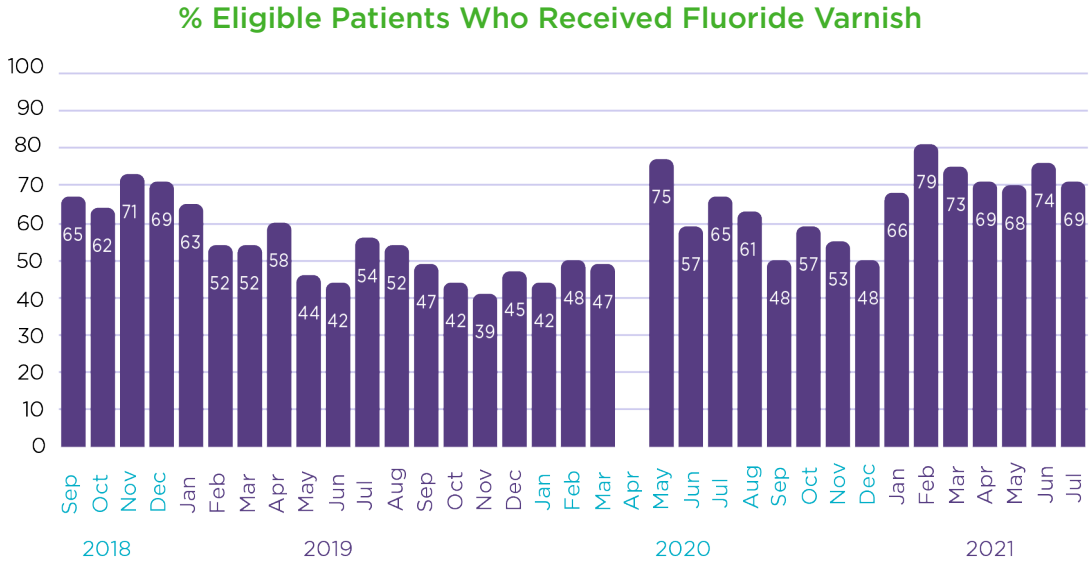
5 interim therapeutic restorations

Objective 2. Provide dental sealant to >75% of eligible patient visits — COMPLETED



Objective 3. Provide fluoride varnish to >75% of eligible patient visits — COMPLETED

We considered "eligible" as a visit for a patient aged 0-18 years; however, because practices reported this at a practice level, adults were also included in the denominator even though adults are not "eligible" for fluoride varnish.



A HOLISTIC APPROACH TO HEALTH

Valley-Wide Health System

Janet* is a first-time mom. Her biggest challenge with receiving health care was transportation until she found out that she could receive dental care at the same clinic she receives her medical care. With CO MDI, Janet is able to see her medical, behavioral health, and dental providers in the same day.

We found out through her regular dental visits that she had been under a lot of stress, and she was experiencing post-partum depression. She was clenching and grinding her teeth at night, experiencing dry mouth from anxiety, and was borderline neglecting her teeth because she had no motivation due to being so overwhelmed.

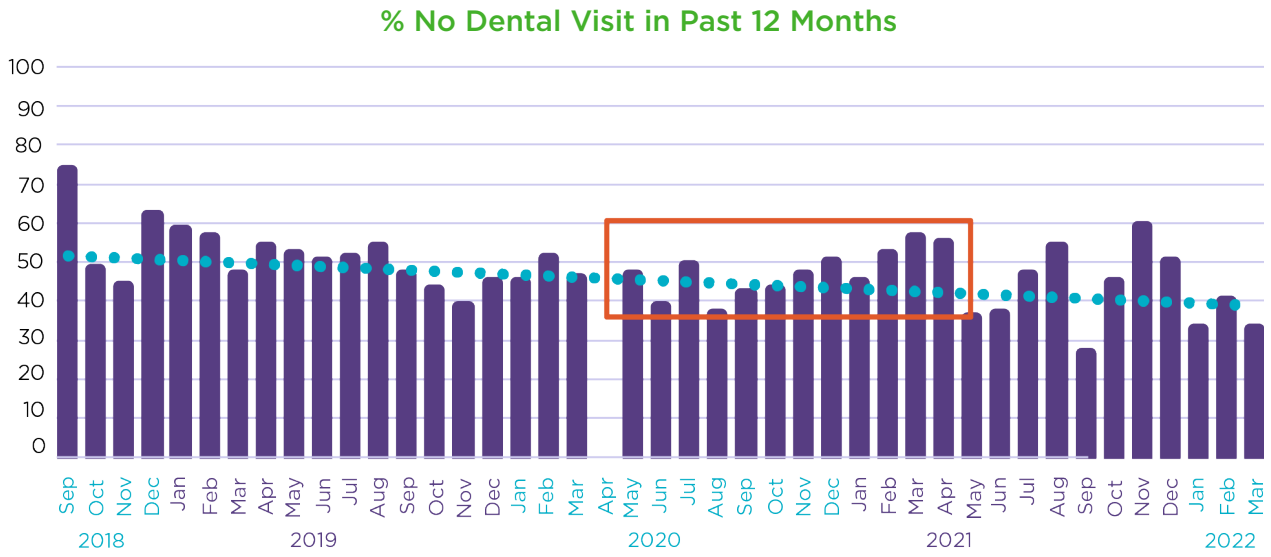
The dental hygienist, behavioral health provider, and primary care provider came together to discuss her case in morning huddle with the goal of helping Janet achieve optimal health. The team put her on a three month recall for dental to help clean the plaque away and apply fluoride to help with demineralization. Her primary care provider continues to see Janet every 6 months to monitor her overall health and the medications that she is on. And finally, her behavioral health provider sees her monthly to discuss stress relieving techniques. With the help of full integration, Janet is now cavity free. She is happy in her home life and her overall health has improved.

*Patient name changed for privacy.

Objective 4. Reduce the proportion of CO MDI patient encounters with reported "last dental visit" > 12 months by 10 percentage points — COMPLETED

A component of the CO MDI Project evaluation included an assessment if MDI care expanded access to dental care. As a proxy to access-to-dental care, we asked practices to report the proportion of patient-visits at which patients reported they had had a dental visit more than 12 months ago. We defined an "improvement in access-to-dental care" as a reduction in the proportion of patient-visits at which patients reported not having had a dental visit within the previous 12 months over the course of the CO MDI project.

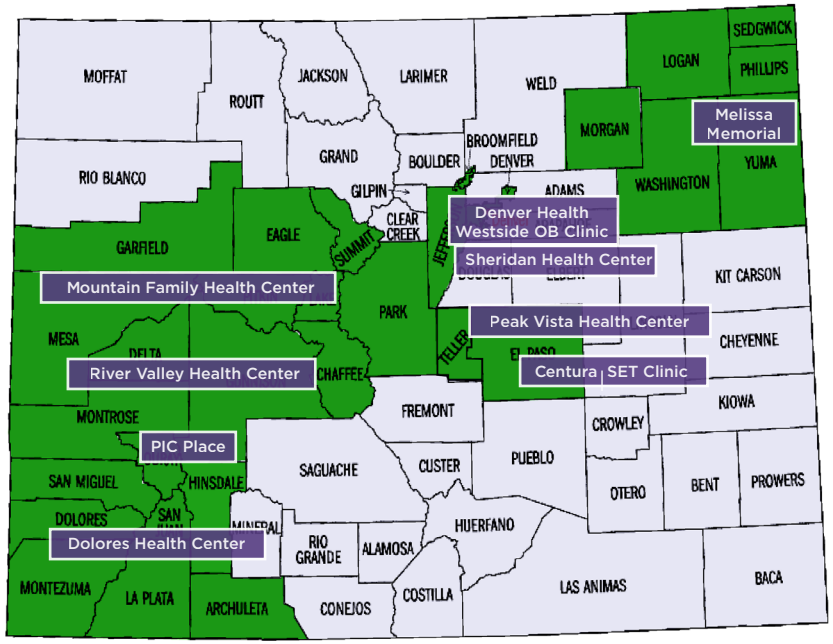
Over the course of the project, there has been a meaningful decline in the proportion of MDI visits at which patients reported their last dental visit was > 12 months ago. This suggests that MDI expanded access to dental care.



Of interest, there is an increase in the proportion of visits at which patients reported not having had a dental visit in the previous 12 months after the start of the COVID-19 pandemic. This may be due to patients avoiding the medical office during the height of the pandemic and/or, telehealth visits which reduced opportunities for MDI visits and dental visits overall.

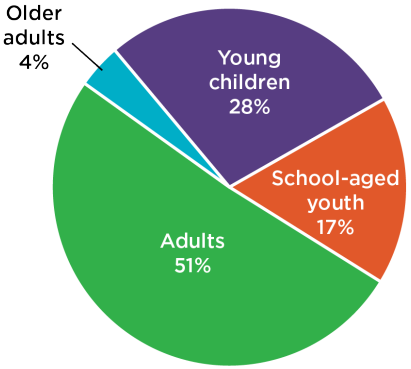
Objective 5. Describe sociodemographic characteristics of CO MDI patient-visits— COMPLETED

The Reach of CO MDI



The CO MDI Project expanded access to dental care across rural and urban communities. About 49% of MDI visits were provided in 28 different rural counties. More than half (55%) of MDI visits were provided to adults which demonstrates that MDI care expanded access to dental care to a broader range of patients than the "medical-model" in which medical providers provide preventive oral health services (e.g., caries risk assessment, fluoride varnish, oral health instruction, and dental referral) at medical visits. 73% of MDI visit were provided to patients insured by Medicaid who traditionally are challenged with accessing dental care.

912 CO MDI visits served pregnant people



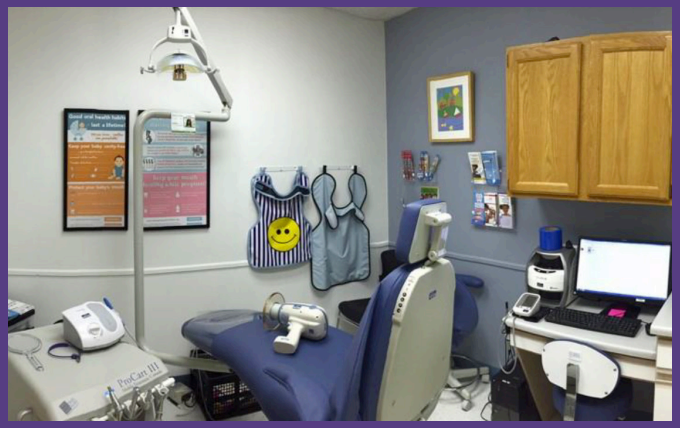
CO MDI Visits by Age

Objective 6. Reduce the proportion of CO MDI patient encounters with untreated dental decay by 10% (e.g. 50% to 45%) — VARIABLE RESULTS

A component of the evaluation included an assessment of whether MDI care improved the oral health of patients. We asked practices to report the proportion of monthly patient-visits with untreated dental decay. We conducted a multivariable linear regression analysis of each practice and compared the monthly prevalence of untreated dental decay in established-patient visits to prevalence in new-patient visits adjusting for time.

Analysis by practice found:

- Practices that provided care to children (e.g., Peak Vista) had a reduction in untreated decay compared to practices that provided care primarily to adults. This may be because children were young and had not yet developed caries or had a low prevalence and/or severity of untreated dental decay.
- Practices that provided care primarily to adults may have been less likely to see a reduction of untreated decay because their patients may have lacked dental insurance which is a known barrier to accessing dental care.
- Practices that provided care primarily to adults also provided more visits for treatment of periodontal disease rather than for caries restoration.
- Practices that provided co-located restorative dental services within the same system demonstrated a reduction in untreated decay which suggests that MDI expanded access to restorative dental care within a health care system (e.g., Peak Vista, Mountain Family, Sheridan, Denver Health Westside, Summit.)



Objective 7. Direct-project revenue will exceed direct-cost expenses in >75% of CO MDI practices — VARIABLE RESULTS

A component of the evaluation included an assessment if MDI care was financially sustainable. To assess this, we asked practices to report quarterly operational expenses of their CO MDI efforts and revenue received from insurance and out-of-pocket (e.g., sliding scale) reimbursement for rendered MDI care.

Most CO MDI practices reached or were close to reaching financial solvency in many quarters.

- 2 CO MDI practices stopped their MDI due to impacts of the COVID-19 pandemic.
- 6/8 (75%) of practices were financially solvent in at least one quarter.
- 2/8(25%) never reached financial solvency due to their small size and internal challenges.
- Factors positively impacting financial solvency included seeing insured patients, providing visits when patient at practice for medical visit, being a federally qualified health center (encounter rate), productivity in larger clinics, new patient referrals to dental department.
- Factors negatively impacting financial solvency included low patient volumes in small clinics, serving uninsured patients, limitations of fee-for-service reimbursement, and no-shows.

CO MDI Financial Solvency by Practice and Quarter

	AXIS	DH Women's Care	Mountain Family	Peak Vista	River Valley	SET	Sheridan	Summit
Q1.2020								
Q2.2020								
Q3.2020								
Q4.2020								
Q1.2021								
Q2.2021			n/a					n/a
Q3.2021			n/a					n/a
Q4.2021	n/a		n/a					n/a

Green : Solvent with collection of < 10% outstanding revenue | Yellow : Solvent with collection of 20% outstanding revenue.

Key Findings

- Integrating dental hygienists into medical care teams expands access to oral health services for patients who traditionally face barriers to accessing services.
- Full-scope dental hygiene practice as part of medical visits in medical settings expands access to oral health care for a broad population of patients including children, adolescents, adults, and pregnant people.
- The oral health of patients receiving care from dental hygienists embedded into medical teams has potential to improve.
- Coordinated referrals to co-located dentists supports restorative dental needs and strengthens the MDI model. Lack of co-located dentists is challenging.
- Integrating dental hygienists into medical teams can increase patient referrals to co-located dental practices.
- Larger medical practices with integrated dental hygienists can reach financial solvency, but smaller practices struggle to make MDI financially sustainable.
- The COVID-19 pandemic impacted the success of medical-dental integration in a few practices, but most CO MDI Wave II practices were able to successfully sustain their medical-dental integration efforts throughout the end of the evaluation period.
- Regional and national interest in MDI is growing.
- Colorado state policies support medical-dental integration through a broad scope of independent practice for dental hygienists.
- Public funding for medical-dental integration expands the CO MDI project regionally through the HRSA-funded Rocky Mountain Network for Oral Health Integration.
- Integrating dental hygienists into medical teams has potential.

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ACKNOWLEDGMENTS

This grant report reflects work completed on the evaluation of the Colorado Medical-Dental Integration (CO MDI) Wave II Project.

This work is being led by Dr. Patty Braun who is employed by Denver Health but conducts evaluations through the University of Colorado ACCORDS. Delta Dental of Colorado Foundation created two independent grants for this evaluation work: 1) to the Denver Health Foundation and 2) to the University of Colorado ACCORDS Program. This report reflects the collective work that Dr. Braun and her evaluation team have completed.

Thank you to Patty Braun and her team, particularly to Catia Chavez MPH, Anna Furniss MPH, and Miriam Dickinson PhD for their support and effort on the evaluation of the CO MDI Wave II Project.