

Medical Dental Integration for All: Implementing Change Across Large Urban to Small Frontier Health Centers



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Objectives

Describe various approaches to medical-dental integration.

Incorporate medical-dental integration approaches into CHC care delivery.

Compare different medical-dental integration approaches.

Recognize medical-dental integration change package key drivers.

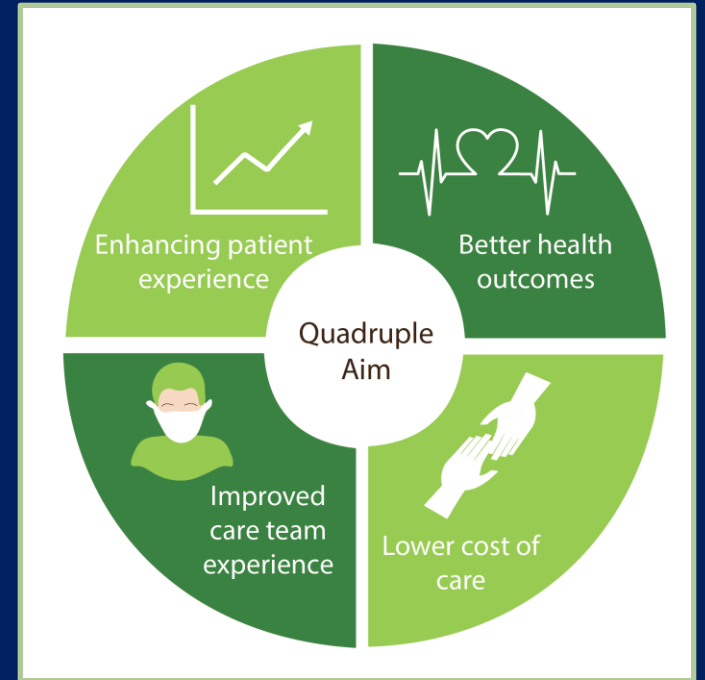


Quadruple Aim

Increase access to care by integrating multidisciplinary services within your primary care setting.



Prevent avoidable ambulatory care sensitive conditions.



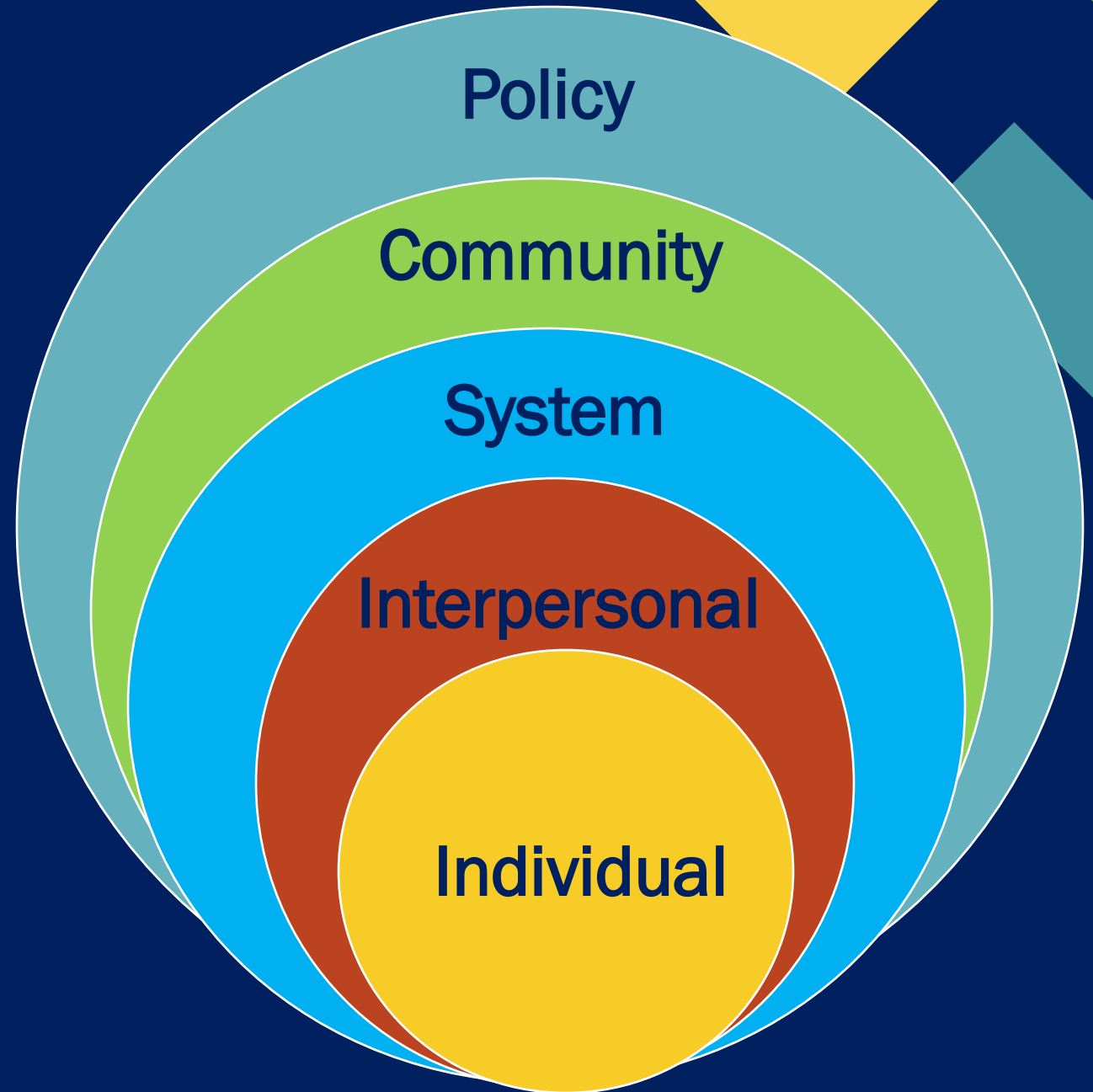
Perspective

Community Health over the Decades

What have we asked of our teams?



Social-Ecological Model of Health



Policy: Affordable Care Act (2008)

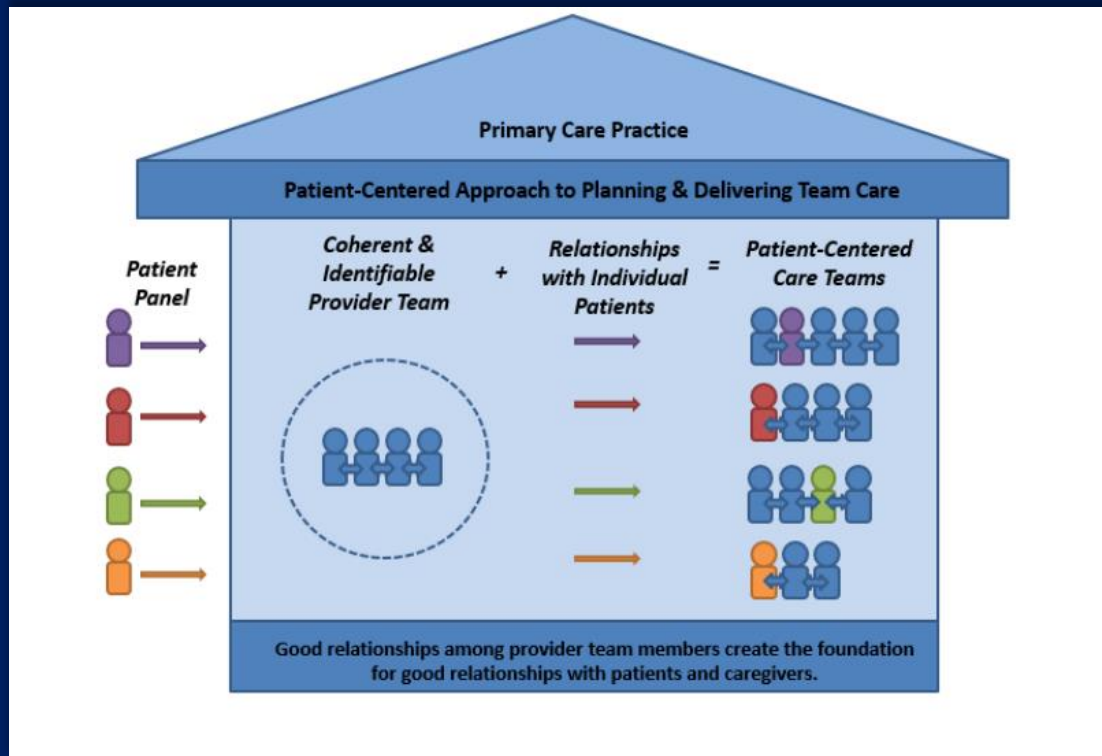
20 million Americans have gained health insurance

Managed care

Population health



Community: Person Centered-Medical Home



Relationship-Based with Empanelment

Partnering with Patients

Respecting patients' unique needs, culture, values and preferences

Supporting patients in learning to manage and organize their own care

Fully including patients and their core caregivers of care plans

Technology

Electronic health record

Apps and Social Media

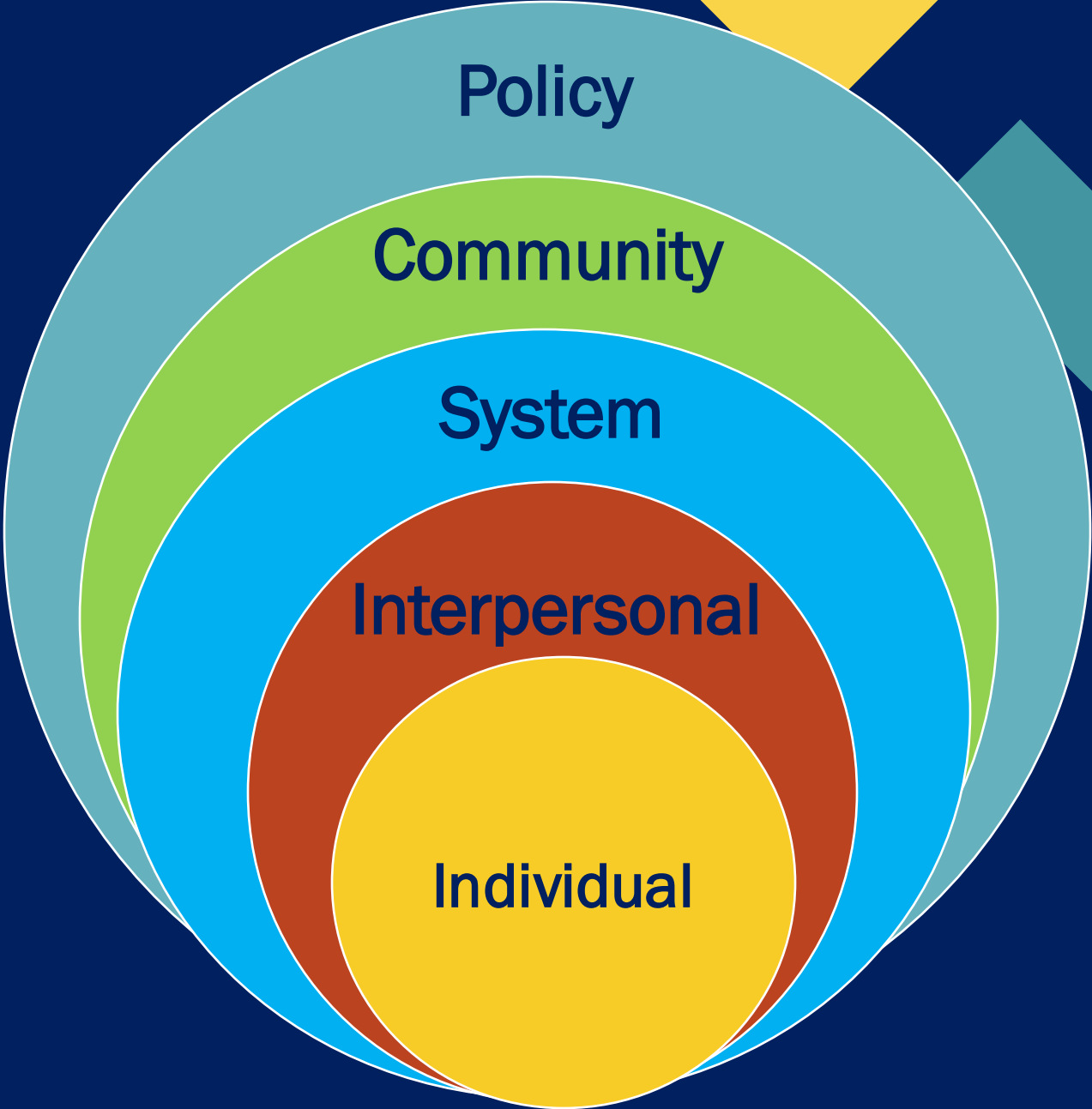
Telehealth

Artificial intelligence

Clinical Management Systems



Interpersonal:



Behavioral Health

Motivational Interviewing
Shared-decision making

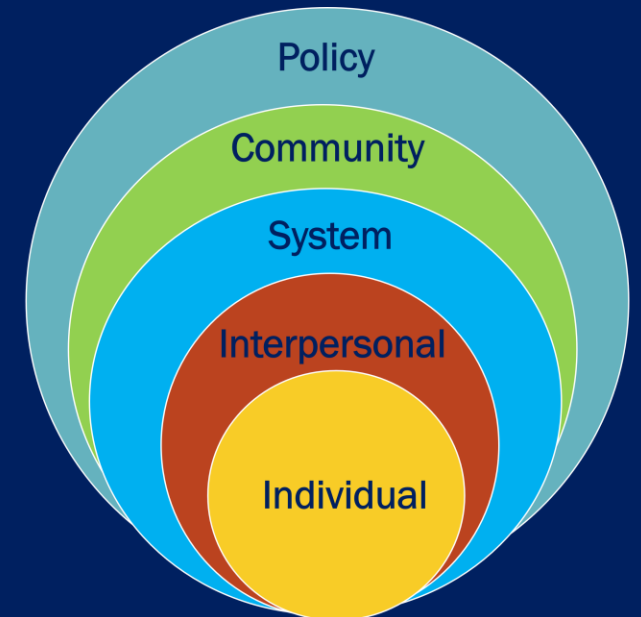


Individual

Behavior-related disease

Genetic discoveries

Treatment development



What now?



Medical Dental Integration and Whole Person Health



The mouth is part of the body

The Connections Between Oral and Systemic Health



The Mouth

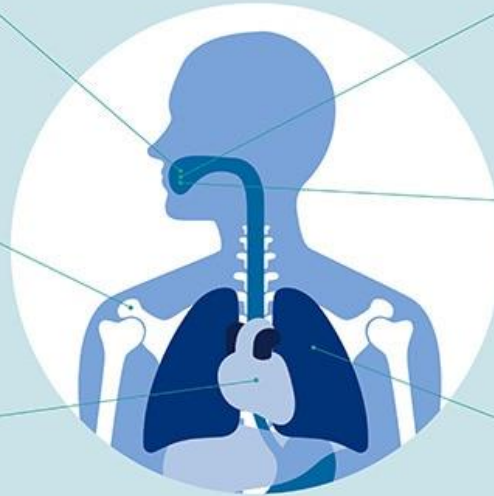
A primary portal of entry for infections and source of potentially pathogenic organisms. Systemic health issues and chronic conditions (like diabetes and heart disease) are also associated with oral health problems, like tooth loss and periodontitis.¹

Bone Health

Skeletal changes that could indicate osteoporosis and musculoskeletal disorders can often be revealed by regular examinations of the mouth and face.¹

The Heart

In patients with gum disease and bleeding gums, infectious oral bacteria can potentially pass into blood vessels and be carried to the heart.^{1,4}



Immunodeficiencies

Oral signs – along with other symptoms like rash, fever, headache, malaise, enlarged lymph nodes or lesions – can indicate larger systemic issues like immunodeficiencies.¹

Diabetes & Periodontitis

Diabetes is a major risk factor for periodontitis. Research has shown that periodontal therapy is associated with improvements in glycemic control – and oral health is a key aspect of diabetes management.^{1,2,5}

The Lungs

Poor oral care may increase the risk of aspiration of oral bacteria and potentially lead to respiratory disease.^{1,3}

Coxsackie Virus and Hand Foot and Mouth

Human Papilloma Virus and Oral Cancer

Allergies and allergy medication with xerostomia

Periodontal disease and tooth loss with malnutrition

Developmental Disorders and Gum Disease

Substance Use Disorder and Meth Mouth

Tay-Sachs disease and self mutilation

Bleeding disorders and gum manifestations

The mouth is part of the body

Noma is a severe gangrenous disease of the mouth and face. Its pathogenesis is linked with non-specific polymicrobial organisms and a range of modifiable risk factors and underlying social determinants shared with other neglected tropical diseases (NTDs).

Noma can be avoided through simple actions that can be performed by everyone!

Early detection followed by prompt treatment is crucial in improving the health of the affected child and can save his/her life. Treatment can be provided at home in the early stages of the disease.

First action: open and examine your child's mouth!

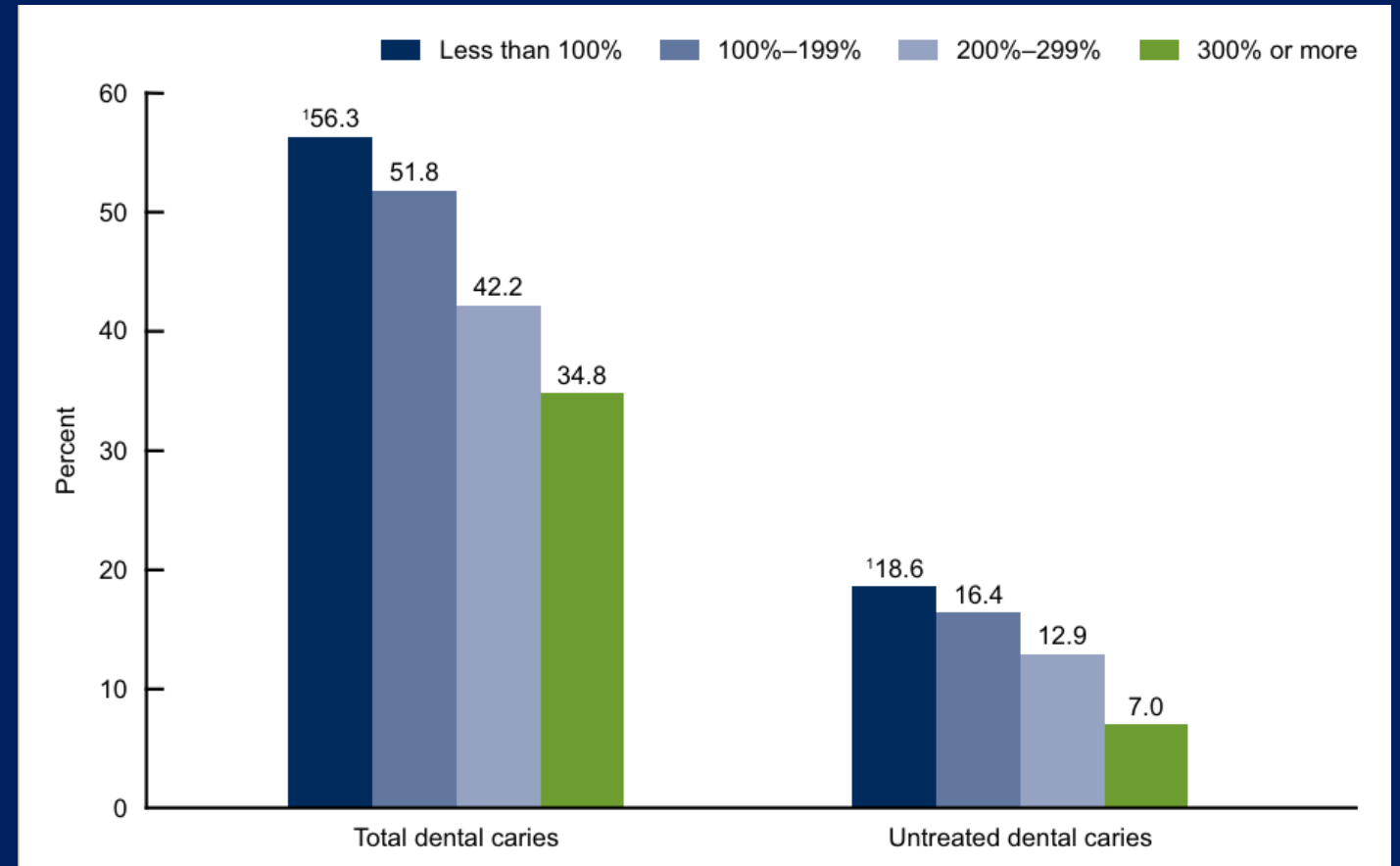
Regular oral examination of children at home or during medical visits is an indispensable action that helps identify gum lesions that may develop into noma in at-risk subjects.



Dental Caries

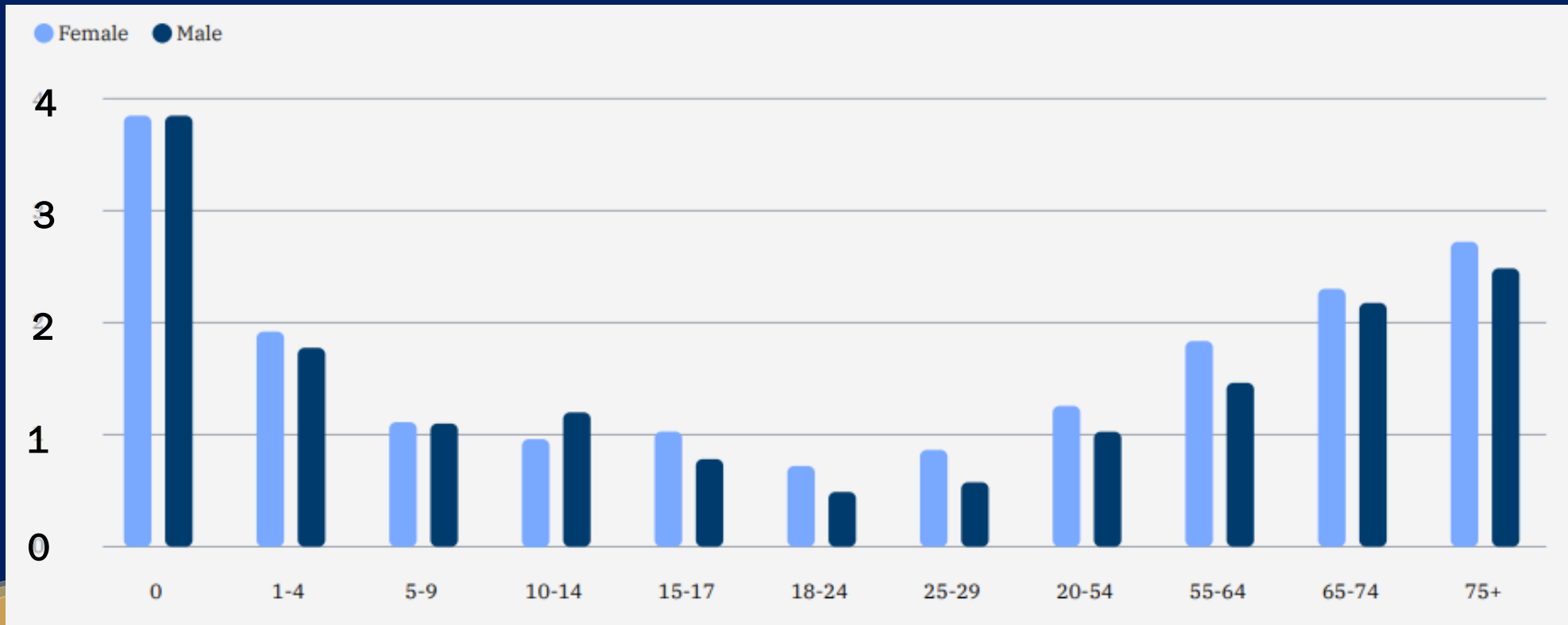
Pain	Cellulitis	Abscess	Tooth loss
Impaired nutrition	Tooth malalignment	Adult decay	Dental anxiety

Prevalence of total and untreated dental caries in primary or permanent teeth : youth aged 2–19 years by federal poverty level: United States, 2015–2016

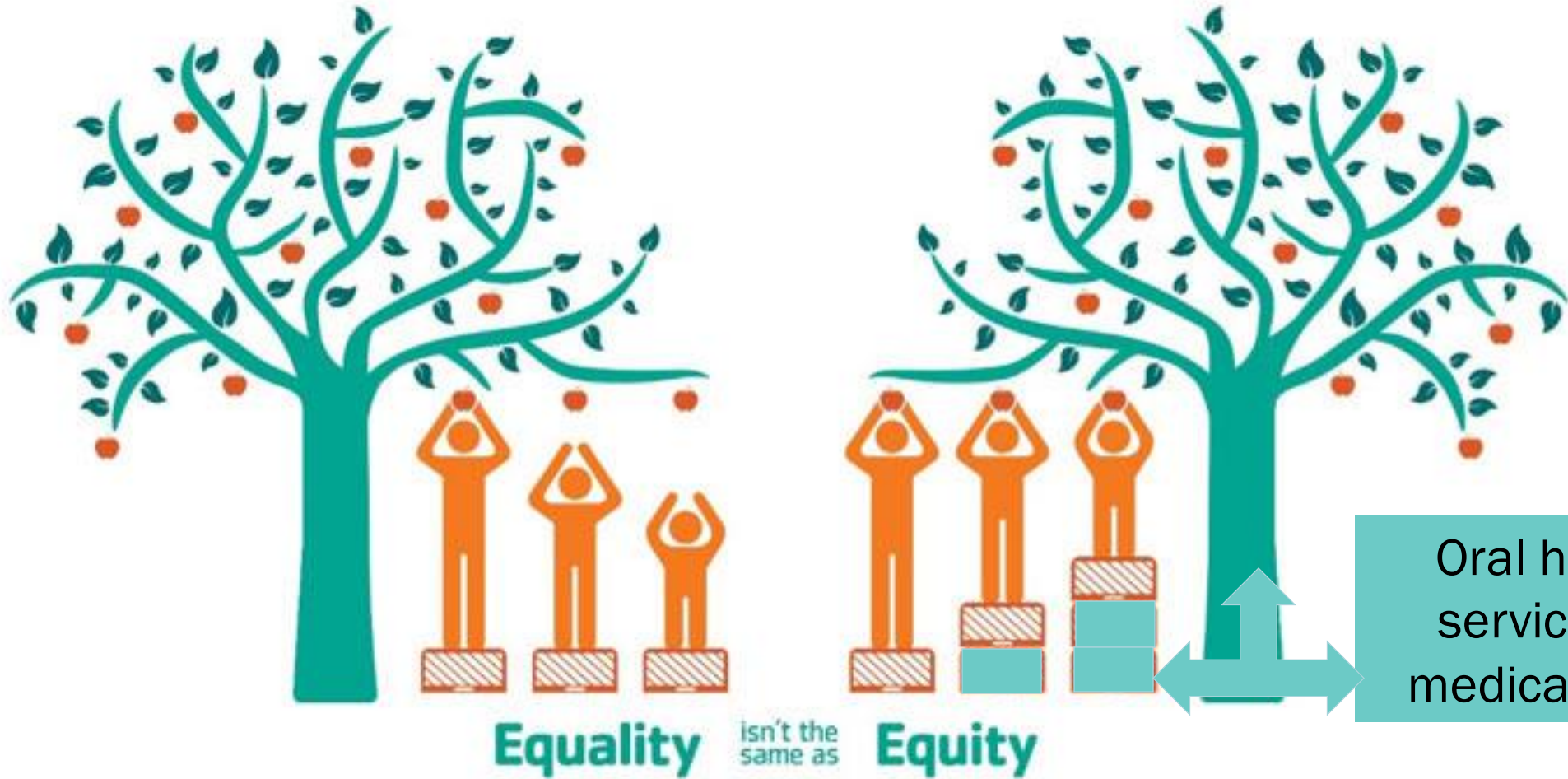


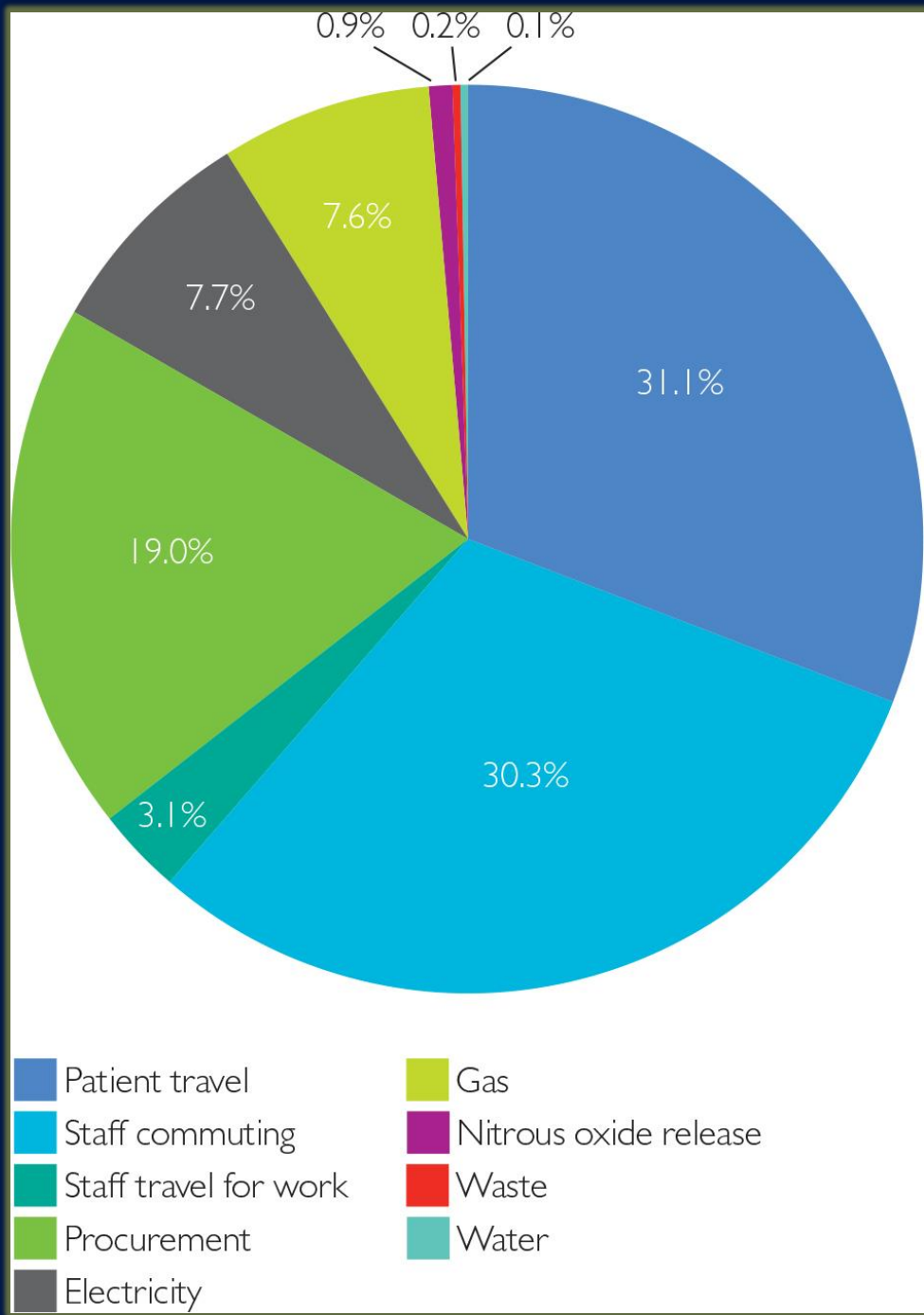
NCHS: National Health and Nutrition Examination Survey, 2015–2016

Annual Primary Care Visits



Promoting Health Equity





What impact is dentistry having on the environment and how can dentistry lead the way?

by Gavin J Wilson, Sagar Shah and Hannah Pugh

Integrating sustainable waste management and procurement into daily practice will encourage the dental profession to tackle environmental change.

Authors: Gavin J Wilson, Sagar Shah and Hannah Pugh,
Fellows on the Chief Dental Officer's Clinical Fellow Scheme*

**Corresponding author:
E: hannah.pugh4@nhs.net*

*Keywords: dentistry, sustainability, carbon footprint,
plastic use, climate change, single-use*

Bright Future

FOURTH

Guidelines for Health Supervision of Infants, Children, and Adolescents



**Bright
Futures**

prevention and health
promotion for infants,
children, adolescents,
and their families™

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



Preventive Dental Services at Medical Visits

Endorsed by AAP, AAPD, ADA.

AAP Section on Oral Health.

USPSTF Recommendation B.

All 50 states reimburse.

3% (2008) → 18% (2018)

For children < 3 years of age.

1 of 4 bill for FV.

Lewis C, Quinonez R, Sisk B, Barone L, Krol D, Kornfeind KR, Braun PA. Incorporating Oral Health into Pediatric Practice: National Trends 2008, 2012, 2018. Acad Pediatr. 2022 Jun 19:S1876-2859(22)00301-1. doi: 10.1016/j.acap.2022.06.008. Epub ahead of print. PMID: 35732259.

IMPORTANCE A 2014 review for the US Preventive Services Task Force (USPSTF) found that oral fluoride supplementation and topical fluoride use were associated with reduced caries incidence in children younger than 5 years.

OBJECTIVE To update the 2014 review on dental caries screening and preventive interventions to inform the USPSTF.

DATA SOURCES Ovid MEDLINE, the Cochrane Central Register of Controlled Trials, and the Cochrane Database of Systematic Reviews (to September 2020); surveillance through July 23, 2021.

STUDY SELECTION Randomized clinical trials (RCTs) on screening, preventive interventions, referral to dental care; cohort studies on screening and referral; studies on diagnostic accuracy of primary care oral examination or risk assessment; and a systematic review on risk of fluorosis included in prior USPSTF reviews.

DATA EXTRACTION AND SYNTHESIS One investigator abstracted data; a second checked accuracy. Two investigators independently rated study quality.

RESULTS Thirty-two studies (19 trials, 9 observational studies, and 4 nonrandomized clinical intervention studies [total 106 694 participants] and 1 systematic review [19 studies]) were included. No study evaluated effects of primary care screening on clinical outcomes. One study (n = 258) found primary care pediatrician examination associated with a sensitivity of 0.76 (95% CI, 0.55 to 0.91) and specificity of 0.95 (95% CI, 0.92 to 0.98) for identifying a child with cavities, and 1 study found a risk assessment tool associated with sensitivity of 0.53 and specificity of 0.77 (n = 697, CIs not reported) for a child with future caries. No new trials of dietary fluoride supplementation were identified. For prevention, topical fluoride compared with placebo or no topical fluoride was associated with decreased caries burden (13 trials, n = 5733; mean caries increment [difference in decayed, missing, and filled teeth or surfaces], -0.94 [95% CI, -1.74 to -0.34]) and likelihood of incident caries (12 trials, n = 8177; RR, 0.80 [95% CI, 0.66 to 0.95]; absolute risk difference, -7%) in higher-risk populations or settings, with no increased fluorosis risk. Evidence on other preventive interventions was limited (education, xylitol) or unavailable (silver diamine fluoride), and no study directly evaluated primary care dentistry referral vs no referral.

CONCLUSIONS AND RELEVANCE There was no direct evidence on benefits and harms of primary care oral health screening or referral to dentist. Dietary fluoride supplementation and fluoride varnish were associated with improved caries outcomes in higher-risk children and settings.

JAMA | US Preventive Services Task Force | EVIDENCE REPORT

Screening and Interventions to Prevent Dental Caries in Children Younger Than 5 Years

Updated Evidence Report and Systematic Review for the US Preventive Services Task Force

Roger Chou, MD; Miranda Pappas, MA; Tracy Dana, MLS; Shelley Selph, MD; Erica Hart, MBS; Rongwei F. Fu, PhD; Eli Schwarz, DDS, PhD, MPH



Sharing



Levels of Medical-Dental Integration



Coordinated

Co-Located

Integrated

Denver Health



An innovative health care system that is a model for success in the nation.

TRUE NORTH

Change the world by transforming the health of our patients and community.

VALUES

EXCELLENCE - We are better every day.

COMPASSION - We care for everyone.

RELENTLESSNESS - We fight for everyone.

STEWARDSHIP - We use resources responsibly.

LEARNING - We educate the next generation.



ACUTE CENTER FOR EATING DISORDERS AND MALNUTRITION
Proving medical stabilization for patients with life-threatening eating disorders - credited with saving more than 2000 lives



ROCKY MOUNTAIN POISON AND DRUG SAFETY
Saving Lives with Answers, serving multiple states and over 100 national and international brands



EMERGENCY RESPONSE
Operating Denver's emergency medical response system, the busiest in the state - handling 118,000+ emergency calls and logging over 12 million miles on our emergency vehicles each year



NURSELINE
Registered nurses fielded over 216,000 calls in 2020 - advising on medical information, home treatment, and when to seek additional care - giving patients peace of mind 24/7



HEALTH CENTERS
Offering total family care in 10 neighborhood centers where families need it the most - 640,000+ patient visits completed annually



ERNEST E. MOORE SHOCK TRAUMA CENTER
Region's top Level I Trauma Center for adults and Level II Center for children + whole family care



DENVER HEALTH MEDICAL CENTER
One of Colorado's busiest hospitals with 23,500+ inpatient admissions annually, ranked in the top 5% for inpatient survival



PUBLIC HEALTH INSTITUTE AT DENVER HEALTH
Keeping the public safe through prevention, clinical services, and community outreach



DENVER HEALTH PEDIATRICS AT DENVER PUBLIC SCHOOLS SCHOOL-BASED HEALTH
Keeping kids healthy in school by providing vital health care to Denver Public Schools students through 19 in-school clinics, free of charge



ROCKY MOUNTAIN CENTER FOR MEDICAL RESPONSE TO TERRORISM
Working every day to plan for the "what if" for 5 states



DENVER HEALTH FOUNDATION
Accelerating Denver Health's mission by providing resources for important projects and programs through fundraising and philanthropy



DENVER HEALTH MEDICAL PLAN, INC.
Keeping our community healthy by providing healthcare insurance to 120,000+



DENVER CARES
Providing a safe haven and detox for public inebriates



CORRECTIONAL CARE
Providing medical care to prisoners in Denver's jails via telemedicine



Preventive Oral Health Services in Medical

Pediatrics



Image credits: Braun

Approach



Results

20% ↓ any decay
(46.7% → 37.3%)

AJPH RESEARCH

Effectiveness on Early Childhood Caries of
an Oral Health Promotion Program for
Medical Providers

Patricia A. Braun, MD, MPH, Katina Widmer-Racich, MA, Carter Sevik, MS, Erin J. Starzyk, PhD, MPH, Katya Mauritsen, DMD, and
Simon J. Hambidge, MD, PhD

Braun PA, Widmer-Racich K, Sevik C, Starzyk EJ, Mauritsen K, Hambidge SJ. Effectiveness on Early Childhood Caries of an Oral Health Promotion Program for Medical Providers. Am J Public Health. 2017; 107:S97-S103.

Quality Improvement

*At least 3 dental visits or fluoride applications by 42 months

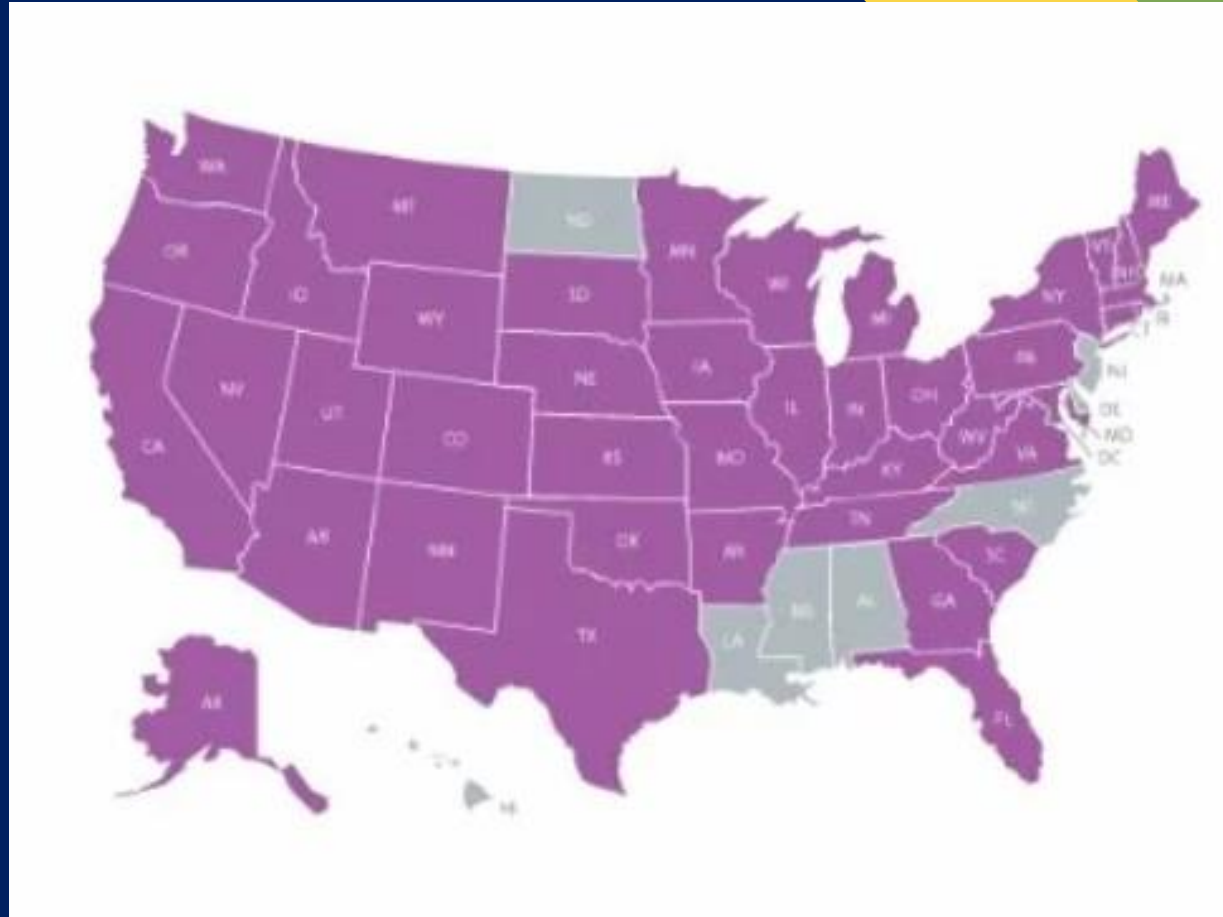
N = 1377

Report month		Peds Oral Health Metrics		50% Dental Visit or Exam by 36 months	75% Fluoride Varnish or Dental Visit or Exam by 18 months	70% 2 Fluoride Varnish or Dental Visit or Exam by 30 months	50% 3 Fluoride Varnish or Dental Visit x 42 months
July 2024							
Measure type							
Peds Oral Health							
Population							
CHS All							
Gender							
(All)							
Race Ethnicity							
(All)							
Insurance							
(All)							
Language							
(All)							
		CHS Overall		76.0%	89.7%	88.5%	90.2%
		Family Med	Total	74.2%	93.9%	91.3%	94.8%
		Internal Med	Total	44.0%	90.9%	88.0%	80.0%
		Peds	Eastside Peds/Teen	94.7%	90.0%	88.6%	88.4%
			Webb Ped Clinic	68.9%	86.3%	84.2%	79.6%
			Westside Peds/Teen	82.1%	86.0%	87.9%	94.4%
		SBHC	Total	19.2%	33.3%	100.0%	66.7%

Levels of Medical-Dental Integration



Direct Access to Dental Hygienists



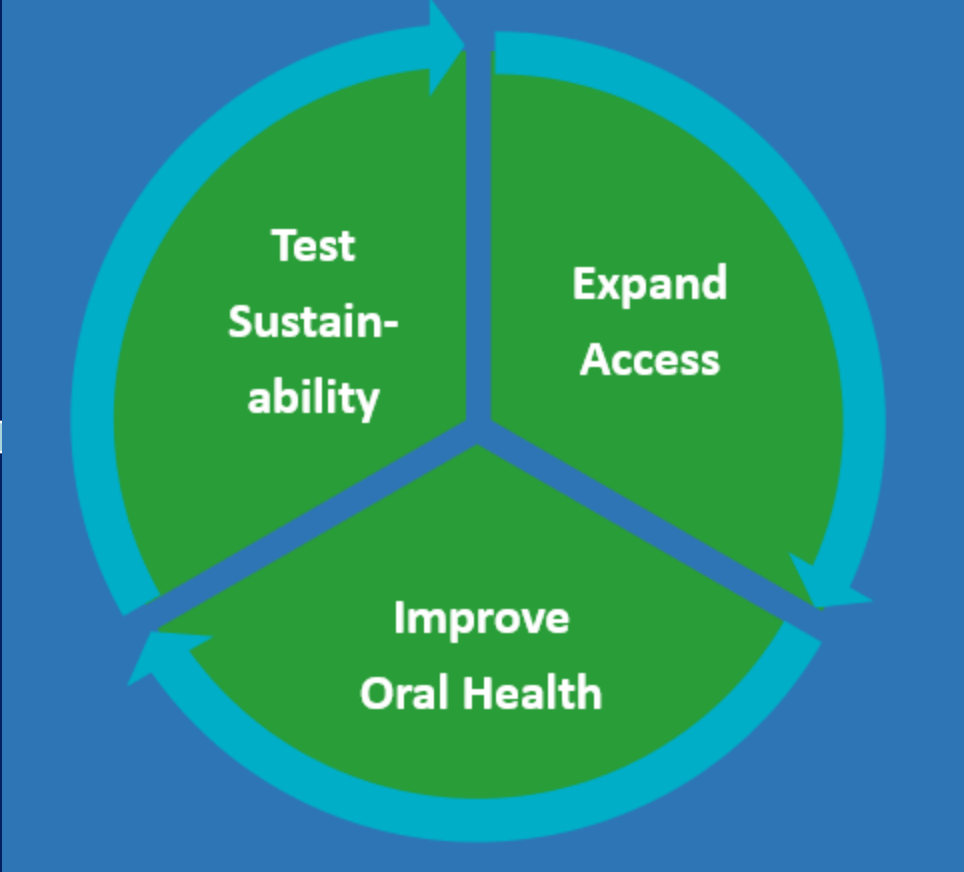
Colorado Medical-Dental Integration (CO MDI) Project

Delta Dental of Colorado
Foundation

2007-2013

2007 to present

**Co-
location**



Colorado Medical-Dental Integration (CO MDI) Project



Braun PA, Cusick A. Collaboration Between Medical Providers and Dental Hygienists in Pediatric Health Care. The Journal of Evidence-based Dental Practice. 2016 Jun;16 Suppl:59-67. DOI: 10.1016/j.jebdp.2016.01.017.

MDI Change Package

Engaged Leadership

Engaged Providers and Staff

Right Dental Hygienist

Dedicated Time

Continuous Process Improvement

Team Assignments and Adoption

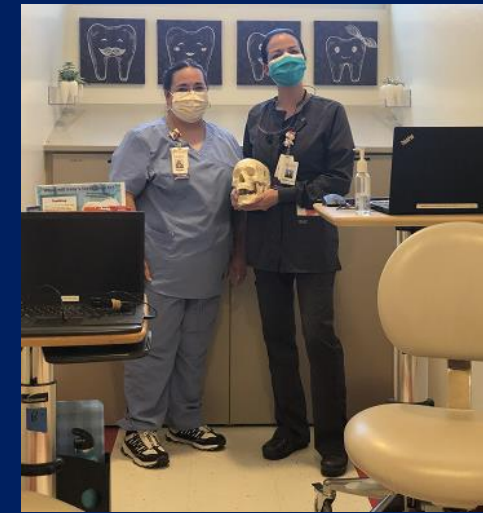
Team Workflows

Strengths of Integrated Model

- Specialized provider delivering care
- In-depth visit rather than fitting one more thing into a WCC
- More effective coordinated referral to dental provider
- Focus more specifically on oral health
- Communicates importance of oral health to families
- Billing and payment

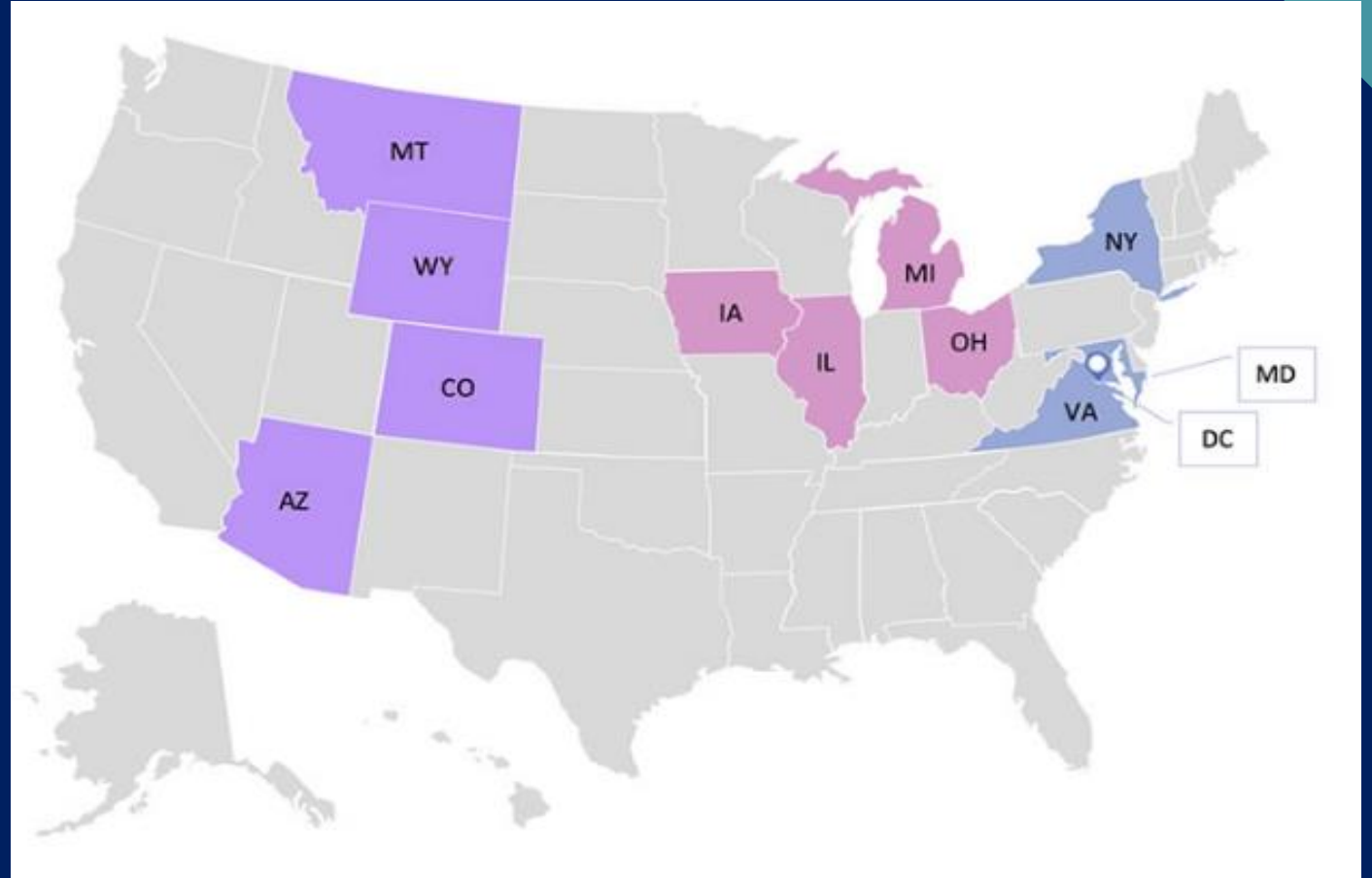
One size doesn't fit all

- One model doesn't fit all
- CHC Oral Health Needs Assessment
- Medical, dental hygiene, hybrid models
- Full scope dental hygiene and oral health screenings

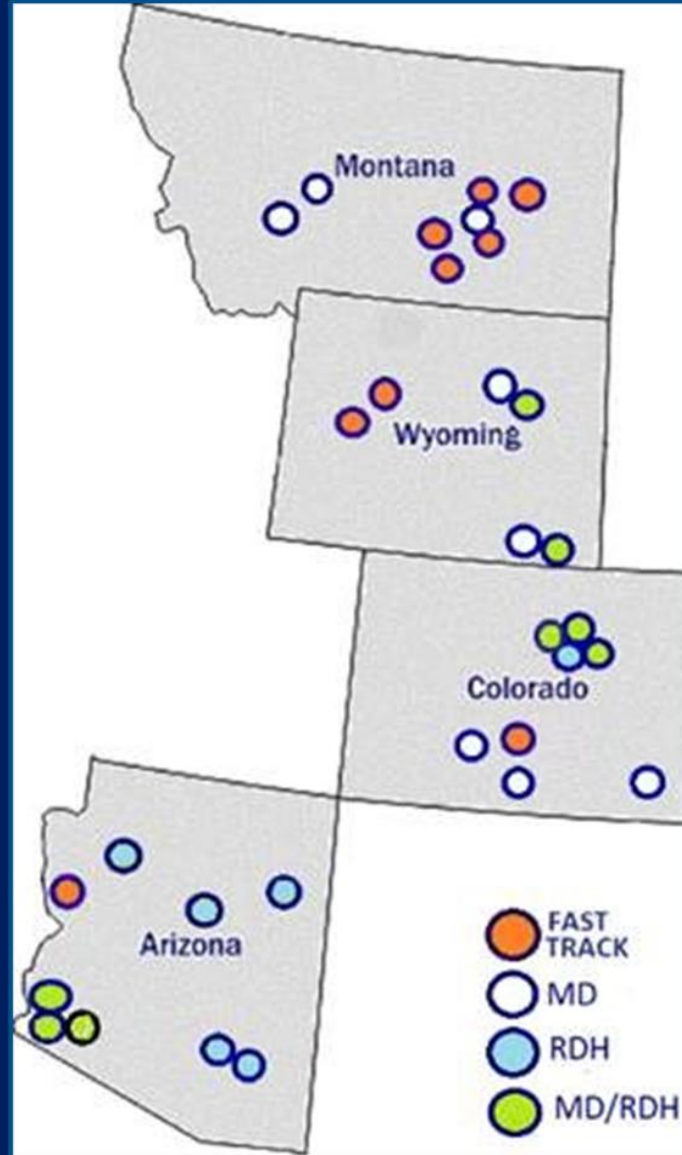


Networks for Oral Health Integration (NOHI) Within the Maternal and Child Health Safety Net Program

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling \$6.4 million with zero percent financed with non-governmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government.



Networks for Oral Health Integration (NOHI) Within the Maternal and Child Health Safety Net Program



- Southwest MT, (2)
- Riverstone, MT (6)
- CHC Wyoming (3)
- Healthworks, WY (1)
- University of WY (2)
- Denver Health, CO (3)
- Clinica Tepeyac, CO (1)
- Valleywide, CO (6)
- El Rio, AZ (2)
- North County, AZ (4)
- Sunset, AZ (3)

Networks for Oral Health Integration

Improve access to and utilization of comprehensive, high-quality oral health care for pregnant women, infants and children at high risk for oral disease.

Funded by the Maternal and Child Health Bureau, Health Resources and Services Administration (2019-2024)

Caries Risk
Assessment

Oral Health
Education

Dental
Referral

Fluoride
Varnish

Patient
Engagement

RoMoNOH Approach

Synchronized,
practice
facilitation
using Primary
Care
Association
coaches

Expanded
dental
workforce
models

Population
management

Value-based
care with
incentive
payments

Enhanced
patient
engagement

MDI Change Package

Engaged Leadership

Engaged Providers and Staff

Right Dental Hygienist

Dedicated Time

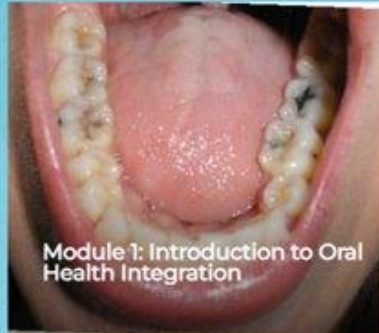
Continuous Process Improvement

Team Assignments and Adoption

Team Workflows

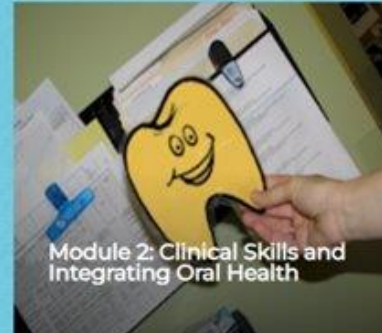
Oral Health Knowledge

Networks of Oral Health Integration



Module 1: Introduction to Oral Health Integration

[View Module](#)



Module 2: Clinical Skills and Integrating Oral Health

[View Module](#)



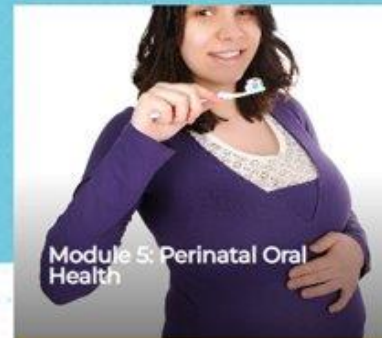
Module 3: Oral Health Communication and Education

[View Module](#)



Module 4: Interprofessional Collaboration

[View Module](#)



Module 5: Perinatal Oral Health

[View Module](#)

- 322 learners
- 1,123 modules completed
- 1,123 hours of CME

Evaluation

“We’ve talked about cavities and how to prevent them. What do you think you could do as a parent to help your child not get cavities?”

CHCs
19/23 (83%)

2,500 bags
sent

2,233 well
child visits

Baseline
survey
N=426

Follow up
survey
N=184 (43%)

Evaluation: Oral Goal Setting

Variable		All, <i>N</i> (%)	Follow-up survey completed, <i>N</i> (%)	Follow-up survey not complete, <i>N</i> (%)	<i>p</i> -value
		426 (100)	184 (43.2)	242 (56.8)	
Oral health goal setting at medical visits intervention delivery					
Did provider talk with you about your child's teeth and gums?	Yes	420 (98.6)	183 (99.5)	237 (97.9)	0.39 ^b
	No	5 (1.2)	1 (0.5)	4 (1.6)	
Did you make a goal?	Yes	419 (98.4)	183 (99.5)	236 (97.5)	0.99 ^b
	No	7 (1.6)	1 (0.5)	6 (2.5)	
# of goals set	<2	128 (30.0)	57 (31.0)	71 (29.3)	0.7 ^b
	≥2	298 (69.9)	127 (69.0)	171 (70.7)	
Confidence in goal	≤6 (not confident)	27 (6.5)	17 (9.4)	10 (4.3)	0.0350 ^b
	>6 (confident)	389 (93.5)	164 (90.6)	225 (95.7)	

Talla, S., Flowerday, C., Dickinson, M., & Braun, P. A. (2024). Does oral health goal setting during medical visits improve parents' oral health behaviors?. *Journal of public health dentistry*, 84(1), 28–35.
<https://doi.org/10.1111/jphd.12597>

Evaluation: Oral Goal Setting

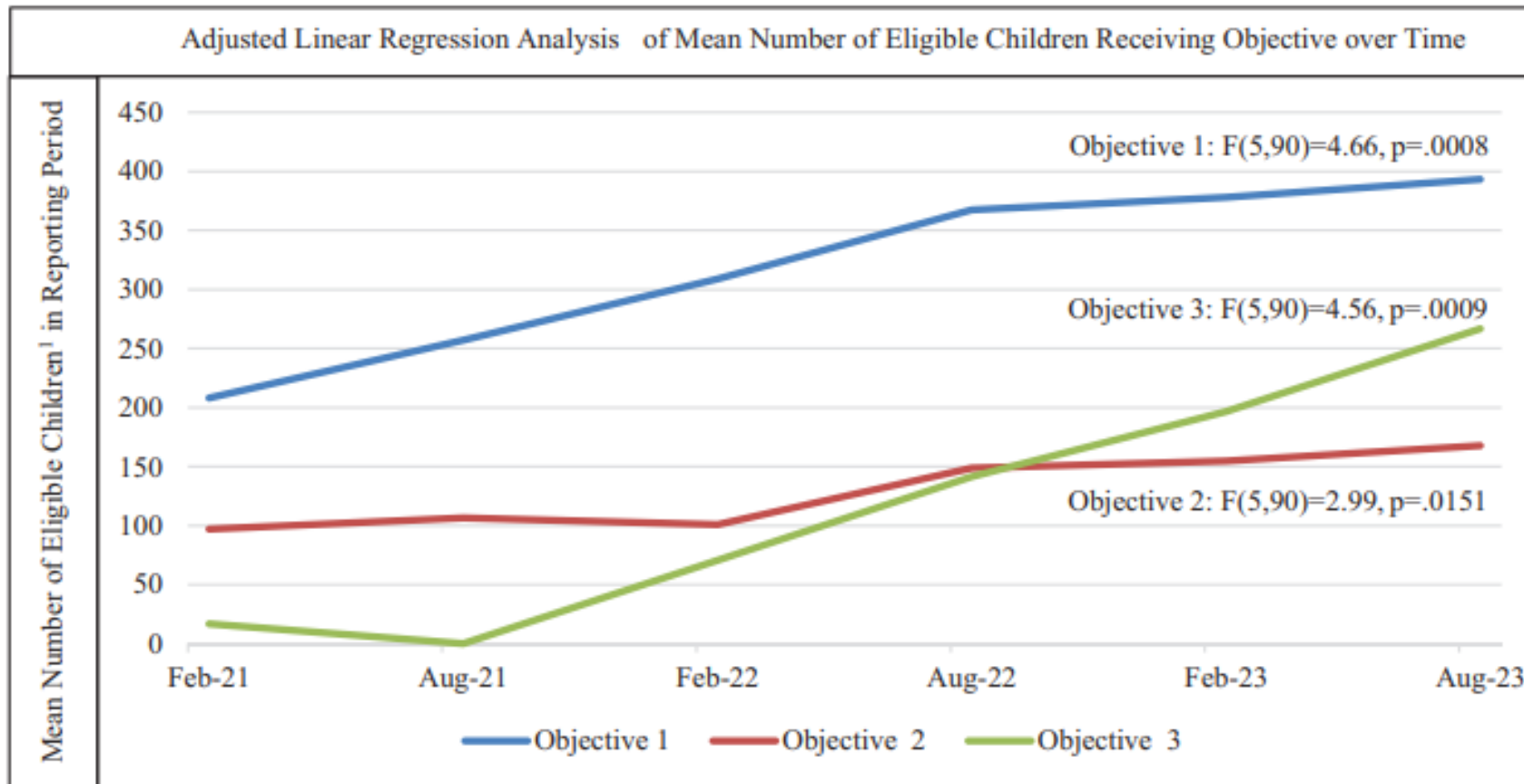
TABLE 4 Unadjusted and adjusted oral health behavior adherence related to oral health goal ($N = 184$).^a

Exposure	Goal set, <i>N</i> (%)	Unadjusted		Adjusted ^b	
		Parameter estimate (standard error)	<i>p</i> -value	Parameter estimate (standard error)	<i>p</i> -value
Brush my child's teeth more often ^c	97 (52.7%)	0.007 (0.155)	0.965	-0.007 (0.158)	0.9623
Brush my child's teeth more often ^d	97 (52.7%)	0.002 (0.172)	0.992	0.005 (0.173)	0.9735
Brush my child's teeth with fluoride toothpaste	68 (36.9%)	0.519 (0.184)	0.005	0.485 (0.189)	0.0114
Keep my mouth germs to myself	49 (26.6%)	0.016 (0.112)	0.886	0.065 (0.115)	0.5706
Only give my child water in their bottle or sippy cup	36 (19.6%)	-0.051 (0.224)	0.820	-0.132 (0.230)	0.5688
Give my child fewer sugary drinks	36 (19.6%)	0.057 (0.113)	0.617	0.075 (0.118)	0.5217
Stop putting my child to bed with a bottle	35 (19.0%)	0.283 (0.122)	0.021	0.273 (0.128)	0.0347
Stop putting my child to nap with bottle	35 (19.0%)	0.189 (0.267)	0.482	0.316 (0.276)	0.2544
Give my child tap water with fluoride	33 (17.9%)	0.638 (0.234)	0.007	0.346 (0.192)	0.0254

Evaluation: Parent Experience Survey (N = 426)

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Having my child get his/her dental care at the same time that they get their medical care makes sense to me.	284 (70%)	97 (24%)	18 (4.4%)	6 (1.5%)
It would be convenient for my child to get his/her dental care from a dental hygienist as part of their medical visit.	265 (65%)	120 (30%)	17 (4.2%)	3 (0.7%)
Improving the oral health of my child will also improve his/her overall health.	340 (84%)	64 (16%)	1 (0.2%)	0 (0%)
I don't have enough time for my child to see both a medical and dental provider at the same visit.	17 (4.2%)	39 (9.6%)	111 (27%)	238 (59%)
Dental problems are not as important as other health problems for my child.	17 (4.2%)	19 (4.7%)	65 (16%)	304 (75%)

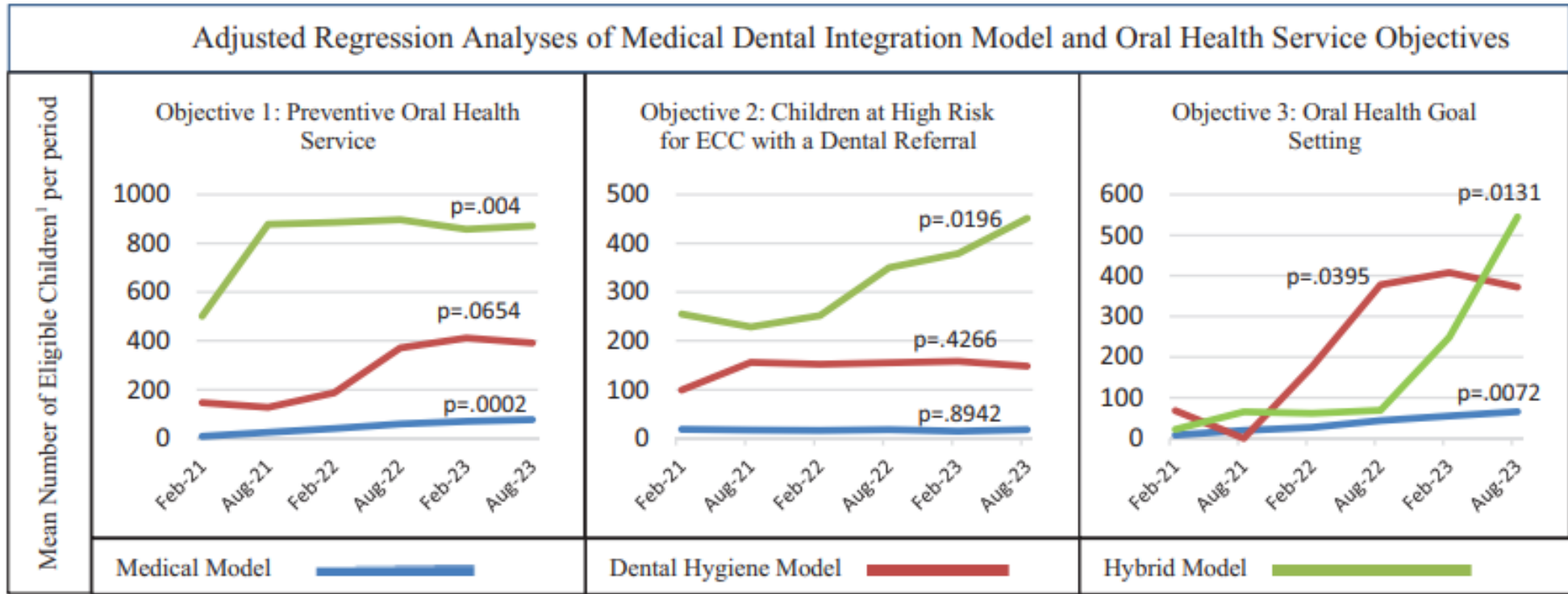
Figure 2. Adjusted linear regression analysis of the proportion of eligible children receiving preventive oral health services.



¹Eligible children includes children 0-40 months of age seen in each 6-month reporting period for a well childcare visit in the medical clinic and at least 1 previous well childcare visit in the same medical clinic in the child's lifetime. The mean number of eligible children who received the objective-specific oral health services were include for each objective.

Evaluation: Model

Figure 3. Adjusted regression analyses: associations of medical dental integration model and objectives.



¹Eligible children includes children 0-40 months of age seen in each 6-month reporting period for a well childcare visit in the medical clinic and at least 1 previous well childcare visit in the same medical clinic in the child's lifetime. The mean number of eligible children who received the objective-specific oral health services were included for each objective and medical dental integration model.

Evaluation: Model

Leadership Take-Aways



Garnering Leadership Buy-in

- **Promote person-centered care**
- **Build consistent & equitable care through standard work**
- **Demonstrate ease of processes**
- **Highlight reduced burden of this work on the medical supportive care team especially the patient access team**



Role of Champion

- **Voice of medical providers**
- **Dedicates time to meeting with coach and reviewing quality improvement metrics**
- **Communicates across teams**
- **Educates medical team colleagues, at staff and provider meetings**
- **Finds opportunities for practice improvement**
- **Sends information back to the team with reminders and tips for making changes**

Medical Staff Buy-in and Engagement

- **Understands importance and impact of oral health on overall health**
- **Understands common risk factors across health outcomes**
- **Sees value of integrated care**
- **Benefits of interprofessional relationships**
- **Interested in working on new project**



Data-driven improvement

- Demonstrates meeting oral health need/demand
- Shows impact of this work on oral health disease of patients

Integrated care

- Community health centers were developed on integrated care concepts, one stop shopping, but dental was at the onset excluded. MDI ties it all together

Right dental hygienist

- Highly motivated, adaptable, problem solver
- Respects timeliness and prioritization
- Patient navigator

Drivers



Right Hygienist

Questions | Discussion





Thank you

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