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Interim Evaluation Report

Evaluation of the Dental Transformation Initiative

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I. INTRODUCTION

The Dental Transformation Initiative (DTI) is one component of California's multifaceted Medi-Cal 2020 Section 1115 waiver program. In late August 2018, the California Department of Health Care Services (DHCS) finalized a contract with Mathematica to conduct an evaluation of DTI. In this report, we provide interim evaluation findings on the initial years of the five-year DTI demonstration program. A final evaluation report on the full demonstration period will be submitted in fall 2021.

A. Overview of DTI

To accelerate improvements in dental care and oral health for Medi-Cal eligible children, California is testing various strategies through a multifaceted set of interventions. DTI combines statewide strategies and targeted county-based components that together provide a strong foundation for evaluating the effectiveness of different approaches to improve the access and quality of oral health care for children. The five-year waiver period for the demonstration spans from January 2016 through December 2020. The DTI has four components known as domains:

- ***Domain 1*** is attempting to increase the use of preventive services among Medi-Cal beneficiaries who are ages 1 through 20. It has operated statewide since January 2016. Dental offices receive incentive payments of varying amounts for meeting or exceeding certain benchmark rates of increasing preventive services delivered to the target population. All dental providers who participate in Medi-Cal are eligible to receive these incentive payments, although federally qualified health centers (FQHCs) and other safety net clinics must first opt in and use a special claims form to get credit for the services they provide.[1]
- ***Domain 2*** is testing a new approach for reducing the incidence of dental caries and improving oral health among beneficiariesage 6 and younger. It began operating in 11 counties in February 2017 and was expanded to an additional 18 counties in January 2019. All providers who participate in Medi-Cal, including safety net clinics, must first opt into this domain and go through training in order to be eligible for incentive payments. Incentives are paid for the use of a bundled package of services that includes use of a caries risk assessment (CRA) tool and related educational and motivational interventions for patients and caregivers.
- ***Domain 3*** is attempting to improve the continuity of care by rewarding dental offices when a child receives care in the same office location from year to year. It began operating in 17 counties in January 2016 and expanded to an additional 19 counties in January 2019. All dental providers that participate in Medi-Cal are eligible to receive these incentive payments, although safety net clinics must first opt in and

[1] Because safety net clinics bill for dental services differently than other dental providers, they must agree to use a special claims form that was developed for the demonstration for the services they provide.

use the special claims form. Incentives are paid annually at the service office location level. The amounts paid increase incrementally with each year of additional continuity an office achieves for a given beneficiary.

- ***Domain 4*** is testing alternative strategies for achieving the goals of Domains 1, 2, and 3. The 13 applicants selected for the Local Dental Pilot Projects (LDPPs) are conducting activities such as strengthening the capacity of the workforce to be culturally and linguistically responsive, furthering the integration of oral health into primary care, and promoting the use of telehealth technology to improve access to dental care in rural and other underserved areas. The pilot program began in mid-February 2017. Individual project agreements were finalized on a rolling basis, with the first one finalized in April 2017 and 12 LDPPs approved by the end of 2017. The 13th and final LDPP was added in early 2018.

B. The evaluation

As required under conditions of the waiver program, DHCS submitted an evaluation design for the DTI to the Centers for Medicare & Medicaid Services (CMS). It was finalized and approved in September 2017. Mathematica's evaluation approach builds and expands upon that design document.[2] The following are the core evaluation components:

- In-depth **qualitative interviews with a sample of dental providers, dental managed care organizations, state officials, and other stakeholders** about experiences with and perceptions of the DTI as well as contextual and other factors influencing the implementation and outcomes of the demonstration. We conducted an initial set of interviews in spring 2019; another round is planned for fall 2020.
- A web-based **survey of a statewide sample of Medi-Cal dental providers** that will generate quantitative descriptive data to complement findings from the qualitative interviews and provide context for the analyses of outcomes and impacts. The provider survey, which will be fielded in fall 2019, is expected to yield about 800 completed surveys.
- A telephone **survey with a statewide sample of Medi-Cal beneficiaries** to learn about their experiences with different aspects of the demonstration and their views on dental care. The survey of beneficiaries, which will be conducted in fall 2020, is expected to yield about 1,000 completed surveys.
- A **descriptive analysis** of administrative data and DTI monitoring and performance data. The administrative data include Medi-Cal eligibility and enrollment, claims and encounters, and provider data that will allow us to examine trends in provider

[2] The evaluation design document is available on the DTI website, https://www.dhcs.ca.gov/provgovpart/Documents/DTIFinalEvalDesign.pdf. In February 2019, Mathematica submitted a plan for implementing the evaluation and preparing the interim and final evaluation reports.

participation, service use, expenditures, continuity of care, and related outcomes. DTI monitoring and performance data provided by DHCS will supplement the findings we produce from the administrative data and will include data on providers that opt to participate in Domain 2, incentive payments made at the office and provider level for all domains, and any performance metrics submitted by the Domain 4 LDPPs.

- A **multivariate impact analysis** using administrative data and appropriate comparison designs to assess the impact of DTI interventions on provider participation, service use, expenditures, continuity of care, and related outcomes. We expect to begin this analysis in early 2020.
- **Site visits and case studies** of a sample of the Domain 4 LDPP demonstrations to explore in greater depth how these pilot projects are being implemented and implications for the broader initiative. The site visits are planned for summer 2020.

We summarize the expected timing for these evaluation components in Table I.1.

Table I.1. Timeline for the DTI evaluation components

Component	Year 1 (7/18–6/19)	Year 2 (7/19–6/20)	Year 3 (7/20–6/21)	Year 4 (7/21–12/21)
Planning and design	Refine evaluation plan Submit materials for IRB approval	IRB renewal	IRB renewal	IRB renewal
Provider survey	Develop instrument and conduct pre-test	Field survey, fall 2019		
Beneficiary survey		Develop instrument and conduct pre-test	Field survey, fall 2020	
Impact analysis Descriptive quantitative analysis	Obtain data and begin cleaning and processing	Initial findings	Final findings	
In-depth provider and stakeholder interviews	Spring 2019		Fall 2020	
LDPP site visits and case studies		Summer 2020		
Evaluation reports		Interim report		Final report

DTI = Dental Transformation Initiative; IRB = institutional review board; LDPP = Local Dental Pilot Projects.

Questions addressed by the evaluation include:

- Do Domain 1 incentive payments lead to higher utilization rates for preventive services?

- Do Domain 1 incentive payments lead to an increase in Medi-Cal provider participation?
- Does an increase in the number of providers participating in Medi-Cal lead to an increase in the number of children receiving preventive dental services?
- Do Domain 2 incentive payments lead providers to perform carries risk assessment for the targeted population, and to ensure completion of appropriate treatment modalities for the management of early childhood caries?
- Does adhering to Domain 2 CRA protocol lead to a decline in the number of emergency department services for non-traumatic dental emergencies and in the use of dental related general anesthesia for children ages six and under in Domain 2 pilot counties?
- Are Domain 3 incentive payments effective in promoting continuity of care for targeted children?
- Are Domain 1 and Domain 3 incentive payments for preventive services and continuity of care more cost effective than the Domain 2 approach?

Appendix A, Table A.1 summarizes the hypotheses and detailed evaluation questions as well as the data sources and analytic methods we are using to address the questions. The table also indicates whether we have findings available for both the interim and final evaluation reports or only for the final evaluation report.

C. Road map for this report

In this interim evaluation report we present findings that were available by mid-June 2019. This includes: (1) results from the first round of qualitative interviews with providers and other stakeholders conducted in spring 2019, and (2) selected descriptive quantitative findings on implementation progress and provider participation, using DHCS/DTI reporting data. We start by describing key characteristics of each Domain and selected data on implementation progress during the initial years of the demonstration. We then present findings from qualitative interviews with stakeholders and providers on their perceptions of and experiences with DTI, including views on how the incentives are structured and other factors influencing the outcomes targeted by the demonstration. We conclude with a description of future evaluation activities, including analyses of quantitative data on DTI outcomes and a formal impact assessment, that we will combine with these earlier interim findings in a comprehensive evaluation report that will be submitted in fall 2021.

II. FINDINGS

The findings in this interim evaluation report focus on implementation experiences during the initial three years of the DTI demonstration, from 2016 through 2018. Domains 1 and 3 were operational during the full three-year period, while Domains 2 and 4 started in 2017. We drew on two primary data sources: (1) descriptive data about the DTI program obtained from DHCS or from published annual or quarterly progress reports about the DTI demonstration and (2) findings from telephone interviews conducted in spring 2019 with 11 program stakeholders and 10 dental providers. Although stakeholders were able to provide broad perspectives on the DTI demonstration and the experiences of dental providers with the program, we experienced challenges securing participation from providers and the resulting small sample of dental providers interviewed may not represent the views of all dental providers.

The final evaluation report will include findings from additional qualitative interviews with stakeholders, a web-based survey of a large sample of providers, a survey of parents or caregivers of targeted children, and analyses of quantitative trends and impacts of the DTI on outcomes targeted by the demonstration. We will also include findings from case studies of a sample of the Domain 4 pilot projects to explore local strategies for advancing DTI goals and extract lessons learned to inform future efforts to improve oral health outcomes for children.

A. DTI implementation: Summary of activity through 2018

1. Domain 1

Domain 1 attempts to increase statewide utilization of preventive dental services among Medi-Cal-eligible children who are ages 1 to 20 by 10 percentage points over the five-year demonstration period. Dental offices earn incentive payments by increasing the number of Medi-Cal children who receive preventive care at the practice. If the office exceeds a baseline number of beneficiaries set by the state, then services provided to additional beneficiaries are reimbursed at a higher rate. If the increase is 2 percentage points or more above the baseline number, the office qualifies for an increase of 75 percent over the Schedule of Maximum Allowances (SMA, or base pay) for services provided to the additional beneficiaries. Increases between 1 and 1.99 percentage points qualify for an increase of 37.5 percent over the SMA.

Domain 1 launched in January 2016. By June 2019, the state had made incentive payments totaling $149.8 million.[3] Table II.1 shows how payments for Program Year

[3] As of June 2019, the total amount paid for PY1 (2016) was $46,633,588, and the total amount paid for PY2 (2017) was $54,330,026. As of June 2019, payments for PY3 (2018) had totaled $48,793,986. The PY3 amount will increase over the remaining 6 months of the 12-month claims run-out period. Domain 1 payment data is reported on the DTI website, https://www.dhcs.ca.gov/provgovpart/Pages/dtidomain1.aspx.

(PY) 2 (2017) were distributed across counties and the number of service offices eligible for and receiving incentive payments that year. In 12 counties there were no incentive payments made in PY2 (8 of these counties had either 0 or 1 dental office that billed Medi-Cal that year), and in 2 other counties payments were below $1,000. The final evaluation report will report findings from our analysis of Medi-Cal administrative data on trends in utilization of preventive services among the target population and on the number of dentists serving Medi-Cal children over the demonstration period, as well as from a multivariate analysis of impacts of DTI on these outcomes.[4]

Table II.1. Number of Medi-Cal dental service offices, dental offices receiving Domain 1 payments, and Domain 1 payment totals by county, PY2 (2017)

County	Number of dental service office locations (billing providers)[a]	Number of dental service office locations receiving a Domain 1 incentive payment in PY2[b]	Total Domain 1 incentive payments, PY2[a]
Out of state	7	2	$11,780
Alameda	145	86	$1,227,268
Alpine	0	0	$0
Amador	1	0	$0
Butte	17	6	$110,171
Calaveras	1	0	$0
Colusa	2	1	$16,143
Contra Costa	65	34	$1,574,066
Del Norte	3	1	$167
El Dorado	10	4	$124,667
Fresno	142	95	$1,998,016
Glenn	1	1	$6,753
Humboldt	9	4	$52,968
Imperial	16	9	$98,082
Inyo	1	0	$0

[4] According to the most recent DTI annual report, as of June 2019 the use of preventive services among the target population increased by between 0.6 and 7.5 percentage points between calendar years 2014 and 2017, while the number of dentists serving at least 10 children in the target age range increased by 7.2 percent. The statewide change in utilization reported during this period was 7.48 percentage points when including beneficiaries served by safety net clinics and 0.58 percentage points when services provided in safety net clinics were excluded from the calculation. The reason for computing these statistics separately was that baseline service use data for safety net clinics were not available. The annual report for DTI PY2 can be found on the DTI webpage: https://www.dhcs.ca.gov/Documents/MDSD/DTI_PY2_Final_Report_12-27-18_2.0.pdf.

County	Number of dental service office locations (billing providers)[a]	Number of dental service office locations receiving a Domain 1 incentive payment in PY2[b]	Total Domain 1 incentive payments, PY2[a]
Kern	101	77	$1,666,731
Kings	4	1	$11,094
Lake	4	2	$692
Lassen	2	1	$1,488
Los Angeles	3,003	1822	$17,344,877
Madera	21	11	$239,195
Marin	12	2	$2,496
Mariposa	0	0	$0
Mendocino	8	2	$14,826
Merced	30	15	$487,098
Modoc	1	2	$8,219
Mono	2	0	$0
Monterey	34	21	$997,002
Napa	7	3	$60,062
Nevada	4	2	$5,253
Orange	775	537	$4,721,654
Placer	44	18	$323,237
Plumas	1	0	$0
Riverside	334	241	$3,372,111
Sacramento	216	106	$1,926,113
San Benito	7	2	$38,250
San Bernardino	398	264	$4,809,782
San Diego	387	189	$3,543,357
San Francisco	83	32	$723,467
San Joaquin	72	54	$920,753
San Luis Obispo	21	11	$265,853
San Mateo	40	21	$439,983
Santa Barbara	32	21	$703,573
Santa Clara	238	141	$1,021,010
Santa Cruz	18	9	$357,407
Shasta	17	5	$107,273

County	Number of dental service office locations (billing providers)[a]	Number of dental service office locations receiving a Domain 1 incentive payment in PY2[b]	Total Domain 1 incentive payments, PY2[a]
Sierra	0	0	$0
Siskiyou	4	0	$0
Solano	39	23	$501,872
Sonoma	29	12	$447,716
Stanislaus	60	36	$1,121,464
Sutter	15	11	$647,071
Tehama	3	0	$0
Trinity	0	0	$0
Tulare	58	31	$719,834
Tuolumne	5	2	$14,586
Ventura	126	91	$1,467,449
Yolo	17	9	$77,109
Yuba	1	0	$0
TOTAL	6,424	4,070	$54,330,026

Note: The Domain 1 payment data and service office numbers cited include fee-for-service, dental managed care, and safety net clinics.

[a]Data from the DTI website, Domain 1, payment data for PY2 (CY 2017). Available at https://www.dhcs.ca.gov/provgovpart/Pages/dtidomain1.aspx. Accessed July 19, 2019.

[b]Derived from office-level data on Domain 1 payments made in PY2, provided by DHCS in February 2019.

DTI = Dental Transformation Initiative; PY = program year.

2. Domain 2

Domain 2 attempts to improve oral health outcomes for children age 6 and younger by promoting use of evidence-based strategies for assessing caries risk and managing disease that emphasize preventive care and noninvasive approaches. The services are delivered as a bundle: providers complete an approved CRA and a treatment plan and provide both nutritional counseling and motivational interviewing. Children assessed to be at high risk for caries are authorized to visit their Medi-Cal dental provider every three months and obtain interim caries arresting medication every six months. Those at moderate risk can visit every four months, while children at low risk can visit every six months (high and moderate risk visit frequencies are above the standard limits). Participating providers receive an incentive payment of $126.00 for providing the CRA bundle of services during each visit; other services are reimbursed at the usual rates.[5]

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Unlike Domains 1 and 3, which provide incentives at the service office level, Domain 2 focuses on individual dental providers and requires that they opt in and go through training before being certified to participate and receive incentive payments. For the first two years, Domain 2 operated in 11 counties; it was expanded to an additional 18 counties in January 2019.

Domain 2 launched in February 2017. By the end of 2018, roughly $5.5 million in incentive payments had been made to providers in 6 of the 11 Domain 2 counties. Provider participation during the initial two years of Domain 2 was lower than anticipated. In selecting Domain 2 counties, DHCS targeted locations with higher rates of restorative services and lower rates of preventive services relative to state averages. As it turned out, many of the counties selected for Domain 2 also have a small number of service office locations. As shown in Table II.2, by the end of 2018, 163 providers had been certified to participate in Domain 2, and most of the activity occurred in the three counties with more than 10 participating providers.

Table II.2. Number of service offices and rendering providers, number of rendering providers participating in Domain 2 in 2017 or 2018, and Domain 2 payments made in 2017 or 2018, by county

Domain 2 pilot county	Number of service office locations	Number of providers certified for Domain 2 in 2017 or 2018[a]	Domain 2 Incentive Payments Feb 2017–Dec 2018[b]
Glenn	1	1	$5,001
Humboldt	9	4	$0
Inyo	1	1	$7,434
Kings	4	5	$11,939
Lassen	2	0	$0
Mendocino	8	16	$318,391
Plumas	1	1	$0
Sacramento	216	102	$2,586,455
Sierra	0	0	$0
Tulare	58	31	$2,534,379
Yuba	1	2	$0
Total		**163**	**$5,463,599**

[a]Data from DHCS, as of 2/15/2019. Providers that started participating in 2019 were excluded.

[b]Data from DHCS Medi-Cal 2020 website, Quarterly Progress Report for Demonstration Year 14, Quarter 2 (10/1/2018–12/31/2018). Available at https://www.dhcs.ca.gov/provgovpart/Pages/medi-cal-2020-waiver.aspx. Accessed July 19, 2019.

DHCS = Department of Health Care Services.

3. Domain 3

The DTI's third domain attempts to increase continuity of dental care for Medi-Cal children up to age 20, which DHCS defines as receiving an annual dental exam from a dentist at the same service office location year after year. Domain 3 is testing whether incentive payments to dentists are an effective means for promoting continuity of care, and Medi-Cal dental providers in 17 selected counties were eligible to receive Domain 3 incentive payments in PYs 1-3 (2016-2018). The incentive amounts increase incrementally with each year of continuity a dental provider achieves for each Medi-Cal child. The original incentive payments ranged from $40 to $80 annually. The state increased the payment amounts by $60 in January 2019; they now range from $100 to $140.

Domain 3 launched in January 2016. As shown in Table II.3, by the end of the second program year, 70 percent of the dental service offices located in Domain 3 counties had earned incentive payments for maintaining continuity of care for a total of nearly 260,000 beneficiaries. Based on the strong performance during the initial three years, DHCS expanded Domain 3 to an additional 19 counties in PY4. [6]

Table II.3. Number of dental service offices in Domain 3 pilot counties and number of offices receiving Domain 3 incentive payments

Domain 3 pilot county	Total number of dental service office locations in PY2[a]	Number of dental service office locations that received incentive payments in PY2[b]	Unduplicated number of beneficiaries returning to service office location in PY2	Domain 3 payments PY2
Alameda	158	113	23,609	$1,087,450
Del Norte	3	1	**	**
El Dorado	12	6	2,142	$97,690
Fresno	163	117	44,125	$2,020,080
Kern	114	89	48,808	$2,268,050
Madera	24	17	7,330	$342,070
Marin	13	4	152	$6,860
Modoc	2	2	**	**
Nevada	6	2	48	$2,070
Placer	27	12	4,570	$208,930

[6] The 19 counties added in January 2019 are: Butte, Contra Costa, Imperial, Merced, Monterey, Napa, Orange, San Bernardino, San Diego, San Francisco, San Joaquin, San Mateo, Santa Barbara, Santa Clara, Solano, Sutter, Tehama, Tulare, and Ventura.

Domain 3 pilot county	Total number of dental service office locations in PY2[a]	Number of dental service office locations that received incentive payments in PY2[b]	Unduplicated number of beneficiaries returning to service office location in PY2	Domain 3 payments PY2
Riverside	375	283	78,204	$3,572,730
San Luis Obispo	15	11	5,764	$270,650
Santa Cruz	22	9	9,167	$427,600
Shasta	18	5	1,652	$72,870
Sonoma	34	18	9,092	$424,600
Stanislaus	62	42	22,911	$1,041,710
Yolo	17	11	1,825	$80,680
Total	**1,065**	**742**	259,590	**11,932,860**

[a]All Medi-Cal fee-for-service dental offices and all safety net clinics regardless of DTI participation.

[b]All Medi-Cal fee-for-service dental offices and participating safety net clinics only.

Data available at https://www.dhcs.ca.gov/services/Documents/MDSD/DTI%20Materials/Copy-of-D3-PY2-CMIO-Revised.pdf. Accessed July 19, 2019.

** = Data suppressed to protect confidentiality due to small number of individuals represented in the data
DTI = Dental Transformation Initiative; PY = program year.

4. Domain 4

The LDPP component of the DTI is funding 13 pilot programs in locations throughout the state to test strategies for advancing one or more of the goals of Domains 1, 2, or 3: increasing preventive dental care, promoting CRA and evidence-based disease management, and improving continuity of care. Agreements between the lead entities and DHCS for 11 of the pilots were executed from April to June 2017; agreements for the other two were finalized in November 2017 and January 2018. Most of the LDPPs were able to execute subcontracts and begin making substantial progress on their goals during 2018, though a few experienced greater challenges with subcontracts and related start-up activities that slowed their progress until later in 2018. Table II.4 summarizes key features of the LDPPs and their expenditures through 2018; more common strategies being employed are summarized below.

- ***Implementing care coordination and oral health education.*** All of the LDPPs are focusing on improving care coordination in some respect, often hiring new staff dedicated to this type of work in addition to training existing staff to support coordination efforts. A common strategy is to locate the care coordination staff within a primary care, social service, or other community-based setting and to have them focus on connecting children with a dental home as well as educating staff in these other settings about oral health needs and available resources. Care coordinators

are also assisting in scheduling appointments and following up with families that miss appointments. Some LDPPs are using technology to centralize referrals and information on appointments and services received to coordinate and avoid duplicating care.

- ***Improving communication and messaging with target populations.*** Cultural and language differences are added barriers to addressing the oral health needs of children in many communities. LDPPs are hiring and training staff with appropriate cultural awareness and language capabilities and working with professionals with oral health and communications expertise to craft messages that will be effective in reaching targeted families. Simple catch phrases are also being used to reinforce key messages for parents of young children, such as “first tooth, first birthday” to reinforce getting the youngest children into a dentist at that early stage and “two times two times two” as a reminder to visit the dentist twice a year for cleaning and a checkup and to brush twice a day for 2 minutes. Some LDPP projects are also improving communication between offices and patients by introducing real-time messaging through phone-based platforms.
- ***Using virtual dental homes.*** To expand access to dental care, many projects are using an approach that involves delivering care in community-based settings such as schools; early childhood programs; Women, Infants, and Children (WIC) centers; and social service organizations. Trained dental hygienists and dental assistants deliver preventive care and sometimes also basic treatment services while under the direction of and using telehealth technology to communicate with a dentist located in a clinic or dental office.
- ***Partnering with primary care providers.*** Recognizing that pediatricians and other primary care providers for children are in a position to influence perceptions and knowledge about oral health care, many LDPPs are partnering with primary care providers to enlist their support in educating families about the importance of oral health and connecting them to dental providers. In places where primary care and dental care are already co-located, such as in many FQHCs, LDPPs are focusing on strengthening the integration of these services to ensure that children in primary care are also getting dental care. At least one project is using an innovative program, known as Reach Out and Read, which promotes oral health literacy. During regular wellness checkups, children are given age-appropriate books about establishing and maintaining oral health.
- ***Implementing quality improvement.*** The types of quality improvement activities being tested by LDPPs include expanding the use of a standard CRA tool and related evidence-based practices to engage and educate parents and other caregivers; training dentists and other dental staff in best practices for working with young children to ensure that they have a positive experience; and introducing registries and related tools and technology to support population-based analysis and tracking, better integration of medical and dental care, and data-driven decision making.

Table II.4. Domain 4 LDPPs

Lead entity	Agreement executed	Domains and target Medi-Cal population	Key activities	Amount invoiced through 2018
Alameda County	April 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Quality improvement through a dental community of practice • Recruit dental providers • Web-based care coordination or data management system	$4,505,304
California Rural Indian Health Board Inc.	June 2017	Domains 1, 2, and 3 Children ages 0–20	• Care coordination and oral health education • CRA and disease management	$470,266
California State University, Los Angeles	April 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Mobile health teams • Awareness raising and education	$3,537,350
First 5 Riverside	November 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Virtual dental home • CRA and disease management • Training of social service and community organizations to provide preventive dental care	$2,189,363
First 5 San Joaquin	May 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Virtual dental home • Training of medical and dental providers • Quality improvement • Reach Out and Read program	$893,309
Fresno County	June 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Virtual dental home • Recruitment of dental providers	$2,353,656

Lead entity	Agreement executed	Domains and target Medi-Cal population	Key activities	Amount invoiced through 2018
Humboldt County	June 2017	Domains 1, 2, and 3 Children ages 0–12	• Care coordination and oral health education • CRA, motivational interviewing • Community-based oral health prevention and education • Hiring and training community dental health workers to integrate oral health care in primary care settings	$752,574
Orange County	June 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Centralized referral • Virtual dental home • Training and education of dental providers	$2,153,526
Sacramento County	June 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Virtual dental home • Training of social service and community organizations to provide preventive dental care	$1,933,261
San Luis Obispo County	January 2018	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Virtual dental home • Outreach, education, screening, and referral at low-income housing sites • Training additional dental assistants and dental hygienists	$177,341
San Francisco City and County Department of Public Health	June 2017	Domains 1 and 3 Children ages 0–6	• Care coordination and oral health education • Quality improvement • Education of primary care providers in oral health competencies • Promotion of better integration of primary care and dental care in FQHCs with co-located services	$863,920

Lead entity	Agreement executed	Domains and target Medi-Cal population	Key activities	Amount invoiced through 2018
Sonoma County	May 2017	Domains 1, 2, and 3 Children ages 0–6	• Care coordination and oral health education • CRA • Hiring and training of community dental health workers to integrate oral health care in primary care settings • Implementation of mobile application for families to use as a personal dental record	$858,423
University of California, Los Angeles	May 2017	Domains 1 and 3 Children ages 0–20	• Care coordination and oral health education • Quality improvement through training and education and a learning collaborative • Dental registry to support monitoring, tracking, and referral	$4,331,404

CRA = caries risk assessment; FQHC = federally qualified health center; LDPP = Local Dental Pilot Projects.

B. Perceptions and experiences of stakeholders and providers

Mathematica researchers interviewed 12 stakeholders and 11 providers in spring 2019 about their experiences with and perceptions of the DTI demonstration. DHCS staff helped us identify key stakeholders, which included staff from Medicaid managed care plans; provider associations; other dental organizations; California state officials; and others who were involved with or familiar with the DTI program, the Medi-Cal program, and dental providers in California. The dental providers we interviewed were randomly selected from lists of participating dental providers in a subset of eight counties where Domains 2 or 3 were operational in 2018 (Domain 1 was operational in every county). We worked with DHCS to select counties that represented diversity in geography across the state, population size, and in urban versus rural nature. At the time we began selecting our provider sample, providers in six Domain 2 counties had received incentive payments. We then selected four counties that were geographically dispersed and included a mix of urban and rural clinics: Mendocino, Inyo, Sacramento, and Tulare counties. To select counties for Domain 3, we first eliminated counties with fewer than 10 service office locations and counties with 5 or fewer locations that received incentive payments. We then discussed the remaining 11 counties with DHCS and decided on 4 counties: Alameda, Fresno, Kern, and Riverside counties.

We initially aimed to secure interviews with up to 48 dental providers. Despite support from DHCS in sponsoring a letter to providers endorsing the study, securing support from the California Dental Association, and encouraging participation in a bulletin to providers, we secured interviews with only 10 providers during the data collection timeframe. Of those 10 providers, 5 participated in Domain 2 and 5 participated in Domain 3; half were safety net clinics and half were other dental practices. We initially planned to begin interviews in March but did not receive the data needed for selecting providers until early April. Limitations in the contact information included in the data files, including lack of provider names or current office or practice affiliation, added further delays to and challenges with locating selected providers. Furthermore, some providers indicated that their schedules were so full that they could not set aside time for a 45-minute interview.[7]

Researchers used standardized interview protocols that included mostly open-ended questions. We used separate protocols for providers, provider associations, the state, dental managed care plans, and other stakeholders in order to target their different roles in Medi-Cal dental care. They asked stakeholders about all the domains, although questions to providers were limited to Domain 1 and either Domain 2 or 3, whichever

[7] We are currently working closely with DHCS to specify the provider data needed for fielding the web-based survey planned for fall 2019 to ensure we have complete and accurate contact information and office affiliation to support survey sampling and locating efforts. We expect fewer difficulties with provider participation in the web-based survey than we had with the qualitative interviews because the survey is estimated to take only 15 minutes and can be completed at times that are most convenient for the provider.

was relevant to the provider's location. The questions covered the factors affecting provider participation, changes in volume of preventive care, implementation of the CRA bundle, and factors affecting continuity of care, among others. The interviews, which lasted 45 minutes on average, were recorded with the informed and signed consent of all participants. A third-party service transcribed the notes, and we reviewed the transcripts for accuracy. We wrote analytic summaries to capture the main points of each section of the transcripts. We applied codes based on topic areas covered in the transcripts and analytic statements by using NVivo, a software tool for managing and analyzing qualitative information.

1. Improving access to and use of preventive care (Domains 1, 2, and 3)

All of the DTI domains have the potential to increase the volume of preventive dental care provided to children in Medi-Cal. Our interviews with stakeholders and dental providers explored the role of DTI and other factors that influenced dental providers to participate in Medi-Cal and the level of preventive care they provided to Medi-Cal children. Although they noted many barriers to participation, stakeholders and providers also described recent changes that, along with the DTI incentives, may have encouraged provider participation and use of preventive services.

a. Factors affecting provider participation

Dental providers and stakeholders alike frequently cited low reimbursement rates relative to the cost of providing services as the main barrier to provider participation. According to one provider, Medi-Cal pays about half of what privately insured and self-pay patients pay, so a practice needs to see twice as many Medi-Cal patients as non-Medi-Cal patients to cover its operating costs. Concerned that low Medi-Cal payment rates were limiting access to quality care, in November 2016, California voters passed Proposition 56, the California Healthcare, Research and Prevention Tobacco Tax Act, which increased state taxes on cigarettes and other tobacco products. Revenue raised through this legislation is used to fund increased payment rates for Medi-Cal providers, including payment rates for a number of dental billing codes that are not already incentivized under the DTI. In addition to increasing the number of dental providers participating in Medi-Cal, stakeholders and dental providers thought these Proposition 56 rate increases may also increase the volume of preventive services for which the DTI provides incentives. In fact, the California Dental Association reported a 10 percent increase in the number of dentists participating in Medi-Cal since the Proposition 56 changes took effect, after years of declines.[8]

Most of the providers we spoke with care for a large number of Medi-Cal patients and often reported that their personal or organizational mission to serve the Medi-Cal population drives their participation. As one private practice dentist said,

[8] See https://www.cda.org/news-events/budget-deal-makes-multiyear-commitment-to-increased-provider-rates.

"The [Medi-Cal] reimbursement is very minimal. It's almost like most of us are helping society and helping and making sure we make a difference. I absolutely love what I do, and I really want to improve some of the lives, and I do." Another explained, "If you are seeing 90 percent Medi-Cal patients, you really have to be doing this because you want to do good for the kids or you know there's a very dire need for dentistry. You're really not doing it for the money."

Stakeholders and dental providers also pointed to administrative burden as another factor that influences participation in Medi-Cal. The process of applying to become a Medi-Cal dental provider historically was lengthy and difficult, and the treatment authorization request process reportedly was complex and stringent. As one provider noted, "They [Medi-Cal] have specific rules, rules change, and then you don't get paid." DHCS made a number of administrative changes recently to mitigate these issues. They have streamlined the Medi-Cal provider application and plan to transition to an online application. They now allow online claims submissions and are working to shorten response time to treatment authorization requests. Stakeholders also observed better customer service since Delta Dental became the administrative services organization for the program. Despite these improvements, some stakeholders said many providers were not aware of the changes. They also noted that there were challenges with overcoming the past negative perceptions of Medi-Cal.

Fluctuations in Medi-Cal coverage of dental care for adults can affect the provision of services for children. A stakeholder noted that the recent restoration of dental coverage for Medi-Cal adults[9] may have led to more parents seeking dental care and for them to schedule appointments for their children at the same time as themselves. In addition, the extent to which providers treat adults affects their remaining capacity to treat children.

Provider concerns about challenges with treating the Medi-Cal population may limit their participation. Stakeholders and dental providers alike reported that some providers resist treating Medi-Cal patients or limit the number they serve because of awareness/oral

Common barriers to oral health for Medi-Cal children and their families

Providers and stakeholders reported a number of barriers to oral health that are relevant to all DTI domains:

Awareness and education

- Lack of education on the importance of oral health
- Misconceptions about the need for dental care for young children or for baby teeth

Socioeconomic factors

- Difficulty with transportation to appointments
- Work schedules and the inability to miss work for appointments
- Financial difficulties with purchasing oral health supplies
- Other life stressors make dental care not a priority

[9] Effective January 1, 2018, Senate Bill 97 (Chapter 52, Statutes of 2017) fully restored adult optional dental benefits that the state had ceased offering in May 2014. See https://www.dhcs.ca.gov/services/Pages/Restoration_Adult_Dental.aspx.

health literacy and socioeconomic challenges. For example, parents may not be aware of the importance of dental care for children who still have baby teeth, may have challenges keeping appointments because of a lack of transportation and work schedules, and may have difficulties practicing proper oral hygiene because they cannot afford supplies (for example, toothbrushes and dental floss). Some of the people we spoke with took issue with views that the Medi-Cal population is more difficult to treat. As one stakeholder said, "There is an unfounded but widely held belief that Medi-Cal patients are less compliant or less well-behaved in the office, leading to stigma and resistance in treating the population."

Some providers lack training in best practices for how to treat young children. A couple of dental providers also mentioned that some dental providers are uncomfortable accepting very young children (infants and toddlers) because they lack adequate training to treat them (although this is not specific to Medi-Cal).

Stakeholders and dental providers thought that statewide outreach efforts during the DTI demonstration period may have contributed to increasing provider participation in Medi-Cal and stimulated demand for dental care. These include two large campaigns: (1) Smile, California and (2) Local Oral Health Programs. DHCS launched the Smile, California campaign in July 2018 as an effort to educate Medi-Cal-eligible populations on Medi-Cal dental benefits and to make it easier for members to access care. The campaign implemented a member outreach campaign and a new website to ease enrollment burdens. Delta Dental has been working with the State of California to improve the look of the website and is using marketing, pictures, and stories to draw attention to the program. Smile, California also includes one-on-one enrollment assistance to providers interested in becoming a Medi-Cal provider.

Using Proposition 56 funds, the Local Oral Health Programs aim to create and expand capacity at the local level to educate, prevent, and provide linkages to treatment programs for oral health problems, including dental disease caused by the use of cigarettes and other tobacco products. Almost all of the local programs sought to increase provider participation in Medi-Cal as a way to increase preventive visits and are conducting outreach to providers. Other social services agencies—such as Head Start, medical and behavioral health centers, WIC offices, school nurses, and refugee organizations, among others—also initiated dental health outreach to families during this same period.

b. Role of DTI incentives in boosting use of preventive services

Although the state has reported an overall increase in preventive services provided, most of the DTI dental providers we interviewed had not increased the number of Medi-Cal children they served in the past two to three years, citing provider capacity or other barriers. For example, some dentists reported that they would need to expand their office in order to see additional patients. A few were interested in providing services in schools and Head Start offices, but noted that there

were policy and administrative barriers to offering services at such alternate locations. One provider recently expanded capacity specifically to treat more children—adding pediatric dental chairs and child-friendly decorations—but was disappointed by the lack of increased demand. The provider noted that parents don't always know which providers are better suited to work with young children.

Some stakeholders thought that the DTI incentives overall created a more sustainable reimbursement rate for dental providers, although most dental providers we interviewed were unaware of the amount of incentive payments they had received or found them negligible. In some cases, the dentists we interviewed were not involved in the financial aspects of their practice or clinic, or they were relatively new participants in the DTI. According to stakeholders and providers, the impact of the incentives may have been delayed for safety net clinics because it took time for the state to develop a new process for them to submit claims to qualify for DTI incentives. In addition, there were delays in sharing information with safety net clinics about other program changes, such as the expansion of Domains 2 and 3 to additional counties. One dentist at a safety net clinic lamented about his lack of information about the incentives: "The FQHCs are your bread-and-butter caregivers to that patient population, and so should probably be the first people you talk to."

Domain 1 incentives seem to be suited better for providers who are new to Medi-Cal and those with smaller existing caseloads. One stakeholder noted that Domain 1 incentives focus on attracting new or minimally participating dental providers to increase their participation, but the design of the incentive does not sufficiently reward dental providers who have been long-standing, large providers for Medi-Cal children and who cannot expand their capacity further. Another stakeholder said the structure of the Domain 1 incentives was not intuitive to dental providers, because it is more complicated than just increasing the base fee-for-service payments. Especially in offices with multiple providers, it is harder for individual providers to understand the incentive structure and to know whether the office had reached the threshold levels that would trigger higher reimbursement rates. As one stakeholder noted, "The DTI payment structure is a bit foreign, I think, to your rank-and-file dentist. Doesn't mean it's wrong, but I think that it takes dentists a while to process that."

Stakeholders and dental providers indicated that the impact of DTI incentives may be hampered by the temporary nature of the payments, which might not be sustained after the demonstration ends and could even be rescinded. One stakeholder explained that there was precedent for this concern: because of a large budget deficit about 10 years ago, California implemented a retrospective cut in provider payments, meaning dental providers had to pay back the state. Another noted, "I think there's probably a lingering factor back in [the dental providers'] minds that it could just be transitory and doesn't look as permanent as other approaches that they're used to seeing in terms of increasing the financing for a program."

2. Caries risk assessment and disease management (Domain 2)

a. Perspectives on Domain 2 design

Stakeholders and dental providers generally view the Domain 2 component as well designed. They thought the required Treating Young Kids Everyday (TYKE) training was helpful—particularly the motivational interviewing component, which was new to some providers—and was not burdensome to complete. They considered the CRA tool a best practice and agreed with the three risk levels and the frequency of recommended visits for each level, recognizing that this was developed collaboratively by dental experts and aligned with their professional opinions. Stakeholders and dental providers also thought the set of activities in the CRA bundle were appropriate, valuable, and effective. In addition, they thought the size of the incentive payment was appropriate, if not generous, for providing those services. Notably, one provider, who had capped the number of Medi-Cal children accepted because of low reimbursement, reported that the Domain 2 payments would enable the practice to increase the proportion of Medi-Cal children it accepts relative to self-pay clients or those with commercial insurance.

b. Provider experience with Domain 2

Prior familiarity with the CRA bundle of activities facilitated participation in Domain 2. Some of the Domain 2 participating providers we spoke with reported that they had previously conducted some of the CRA activities, although motivational interviewing was new to them. Domain 2 allowed these providers to now be paid for their efforts and add to or formalize them. In contrast, some stakeholders and providers speculated that the lack of familiarity with the CRA activities may have posed a barrier for some other dental providers to participate in this domain. One stakeholder reported hearing that some dental providers thought the training would be time-consuming and that adopting a new routine and protocol in their practice would be too difficult or otherwise unappealing.

The choice of initial Domain 2 counties contributed to low participation. The 11 pilot counties were selected largely because of their relatively higher ratios of restorative to preventive care. Although not an explicit selection criteria, stakeholders noted that the counties selected for the initial pilot also tended to be smaller and have fewer existing Medi-Cal dental providers from which to recruit. They were hopeful that participation would increase in 2019 with the addition of larger counties that have many Medi-Cal dental providers.

Dental providers found the nutritional counseling and motivational interviewing activities to be very valuable. One provider appreciated that Domain 2 enabled him to "spend a little bit more time with the kids and the parents, not just go through the exam but also conduct a motivational interview, find out the real cause of the risk and help modify the behavior of the child and the parents to actually help prevent cavities." This provider described his process of providing motivational interviewing: "I try to make it as natural as possible for the parents. Just try and have a conversation with them and, of course, asking the questions that are geared towards motivational interviewing. That's gauging their willingness to change, their ability to change." Although only dental providers who bill Medi-Cal are required to complete the TYKE training, several dental providers reported that dental assistants or other staff also completed the training.

> One stakeholder who was involved in provider recruitment explained the challenges: "It was sort of a double hurdle. You'd have to convince them, A, [to] sign up to enroll [in Medi-Cal], and then, B, [to] sign up to participate in this pilot, which is sort of a multistep process. It took a lot of time for providers to think about it."

Stakeholders noted that it was difficult to monitor whether or not dental providers were adequately completing the CRA bundle of activities. A couple of stakeholders raised this concern. As one explained, "The very generous level of funding that they've attached to the bundle presumes that [dental providers] will actually do it the way it's supposed to be done and take extra time to work with patients to get them engaged and get them to change behaviors.... [But there is not] any kind of verification that [dental providers] are actually doing this, and doing it effectively."

Dental providers reported mixed experiences in how receptive Medi-Cal parents were to the more frequent visits authorized under Domain 2. Although some dental providers reported that the recommendations were well received, others said some parents were not open to bringing their child in more frequently. As one provider explained, "[The term] 'high risk' gets moms' attention." Another provider estimated that almost three-quarters of patients were returning for visits at the increased frequencies recommended by the CRA. However, several other dental providers explained that, even with their efforts to stress the importance of more frequent visits with Medi-Cal children and their parents, they continue to face high rates of no-shows and rescheduling of appointments.

3. Increase continuity of care (Domain 3)

a. Perspectives on Domain 3 design

Stakeholders and dental providers viewed the Domain 3 incentive positively, finding it easy to understand and large enough to support practice change. Some stakeholders reported that the Domain 3 incentive structure is straightforward and more intuitive for dental providers to understand and comply with than the Domain 1 incentives. As one stakeholder explained, “You get an incentive to bring patients back continuously. Clearly, from a clinical point of view, if you bring people back, they’re going to get more preventive care. So I think it’s very straightforward: draw the line from A to B to C.” Stakeholders and some dental providers reported that the Domain 3 incentive provides enough financial support for providers, even small offices, to put in more effort to proactively make appointments for patients; remind them of these appointments; or, as in the case of one provider, create a dashboard to systematically track patients due for visits.

> “We can have our patient engagement teams and various groups work on that list to call those patients or use the various methods we do—postcards or text messages—to remind them to come in for a dental visit. DTI prompted us to start doing that. We always ran recalls and kept track of that, but now there’s more of an incentive to do so.”
>
> —Provider

A few dental providers were less certain that the incentives made a difference. One provider appreciated the incentives as a way to help cover overall practice costs, but had not pursued new strategies as a result. Another provider was unaware of the incentives received, so assumed the payments were not significant and reported not doing anything differently to promote continuity.

b. Provider experience with Domain 3

Factors that influenced continuity of care for Medi-Cal children included lack of awareness about the importance of obtaining ongoing, routine care; socioeconomic factors (discussed earlier); and satisfaction with the dental provider. One dental plan reported that children who started with a practice at a young age typically remained with that provider and will receive more preventive services over time. However, some stakeholders and dental providers reported that the Medi-Cal population was more transient than the general population (or at least perceived to be), which made staying with the same provider challenging. Finally, stakeholders and dental providers reported that satisfaction with the provider also impacted continuity of care. If parents and children were not comfortable with their initial provider, were unable to make follow-up appointments in a timely manner, or could not receive all types of needed services in the same location—for example, restorative services in addition to preventive and primary care—then parents might seek care elsewhere.

Although many socioeconomic factors are out of the dental providers' control, stakeholders and dental providers have focused on facilitating transportation to appointments and enhancing outreach to improve continuity of care. In addition to raising awareness about the Medi-Cal transportation benefit, some dental providers reported using ride-sharing apps to facilitate timely transport (traditional medical transportation services often require 24-hour notice). Others mentioned working with case managers to identify barriers to attending appointments and following up on missed appointments. A couple of stakeholders and dental providers discussed how providing dental care in schools could help eliminate the transportation and other socioeconomic barriers. Some dental providers and health plans have redoubled and revamped traditional strategies to encourage and remind patients to return to the practice. These strategies included using text messaging both for sending messages to motivate parents to make appointments and to send reminders of upcoming appointments or public service announcements.

4. Perspectives on Domain 4 progress to date

Although the qualitative interviews conducted in spring 2019 did not focus explicitly on Domain 4 (we plan to study those projects closely in 2020), some stakeholders and providers offered insights about the LDPP component. Many stakeholders were excited about the LDPP component and thought it had the potential to advance innovative strategies that could be replicated and sustained. One stakeholder observed that LDPPs were able to make connections and forge partnerships at the local level that the state could not, adding: "It's about catching people through multiple places—school, dentist office, WIC site." Several acknowledged the substantial amount of effort and time it took at the state and local levels to get the LDPP component in place. They felt that this effort had the potential for a great payoff, if the projects have enough time to implement their plans. Sustaining LDPP activities will be easier for things that can be reimbursed than for those in which new funding must be secured—such as for community health workers to provide oral health education and coordination.

5. Recommendations for improving the impact of the DTI

Stakeholders and dental providers suggested several ways to increase the impact of the DTI (across the three domains) in the near term, through efforts targeted both at dental providers and Medi-Cal parents and children. Domain 4 pilot projects are testing many of the recommended approaches, which should provide further insights into strategies that are more effective. Further, it is likely that the sharing of ideas across dental providers through collaborative learning activities and discussions would help spread best practices across these areas.

- ***DHCS could continue to implement administrative changes and make dental providers aware of these improvements to encourage their participation.*** As one provider suggested, "Providers are burned out from changing rules and issues with payment and don't want to go back to Medi-Cal. If Medi-Cal was to streamline

and create new policies and payment, they could advertise that to improve outreach. It's not enough to just encourage more dentists to participate, unless the existing structure is changed."

- ***Dental provider associations could increase training for dental providers.*** This includes training to help providers become more comfortable with treating children, especially infants and toddlers. More training on how Domain 1 incentives are computed would also be useful. Domain 2 training should continue to focus on building provider skills in motivational interviewing and nutritional counseling, while remaining not overly time-consuming. In addition, some dental providers were not aware that silver diamine fluoride treatment was covered as an interim caries arresting medication for high-risk children.
- ***DTI providers could partner with medical providers and other organizations to help with outreach efforts and provide services.*** One stakeholder said that pediatricians hold a "fair amount of sway" in forming parent and child attitudes about seeing a dentist, and they can help establish the habit earlier. Dentists could also partner with other types of professionals and organizations such as schools, childcare centers, and WIC offices to encourage Medi-Cal children and families to seek dental care and to offer alternative locations for dental care.
- ***DTI providers could promote a dental home concept so that Medi-Cal families see the value of returning to the same provider for ongoing care.*** For example, one safety net clinic described being a "firm believer" in continuity of care. If a child receives emergency dental care in the clinic, then staff encourage the family to return to their regular provider afterward. If there isn't one, then staff encourage the family to make this provider their dental home.
- ***DHCS and other stakeholders could provide more targeted outreach and education to Medi-Cal children and their parents.*** More could be done to raise parent and child awareness of starting routine preventive care at a very young age. Reaching out to pregnant women (and perhaps including them in the eligible population for the incentives) is also important because their dental disease can transmit bacteria to their baby. Prenatal visits are an opportunity to educate them about the importance of bringing in their baby for preventive care. A few stakeholders and dental providers stressed the need for more education about home care, such as instructing parents to not allow their baby to fall asleep with a bottle in their mouth and to encourage parental modeling of good oral hygiene (for example, parents brush their teeth with their children). Perhaps even providing incentives to children could help. DHCS and other stakeholders could use more data-driven approaches to concentrate outreach in areas that need the most support—for example, focusing on geographic areas with high numbers of Medi-Cal-eligible children.

- ***Overall, stakeholders and dental providers think the DTI is a promising model and would like the state to sustain the program.*** But they also pointed out flaws in the current design that could hamper meeting program goals. For example, the incentives for Domain 1 are not well understood or structured. In addition, without continued funding, it is unclear how dental providers would react. For example, some providers that were already engaged in this work before the DTI expected to be able to continue without additional funding; others noted that some new efforts that were particularly time-consuming or otherwise resource-intensive, such as the nutritional counseling and motivational interviewing required in Domain 2, would be difficult to sustain without ongoing funds.

III. PLANS FOR REMAINING EVALUATION ACTIVITIES

This final section describes additional evaluation components that will generate findings for the final evaluation report, to be submitted in fall 2021. The final evaluation report will synthesize findings from all of the evaluation components. This will include (1) quantitative descriptive trend data generated from our analysis of administrative and DTI program data and (2) impact estimates based on a multivariate analysis using appropriate comparison designs. Findings from surveys of providers and beneficiaries, qualitative interviews with providers and other stakeholders, and site visits to selected LDPPs will provide important context to support the interpretation of the quantitative findings, including factors that influence the outcomes targeted by the demonstration.

A. Analysis of administrative data and DTI impacts

We will use administrative data obtained from DHCS to descriptively analyze dental service use and provider participation trends and to estimate the causal impacts of DTI on access to dental care and use of dental services among Medi-Cal children.

1. Outcome measures

Using claims and encounter data, we will create outcome measures that will help us determine whether the DTI was effective in advancing the overall health and well-being of Medi-Cal-eligible children. Specifically, the proposed measures will include use of preventive dental care, dental treatment services, emergency department (ED) visits for dental treatment, CRA services, and continuity of care (Table III.1).

Table III.1. Proposed outcome measures and data sources

Domain[a]	Outcome	Data source
A. Service use (access or process quality)		
1, 2, 3, 4	Preventive dental visits	Dental claims
1, 2, 3, 4	Diagnostic dental visits	Dental claims
1, 2, 3, 4	Dental exam	Dental claims
1, 2, 3, 4	Topical fluoride for children at elevated caries risk, ages 1–20	Dental claims
1, 2, 3, 4	Dental sealants for children at elevated caries risk, ages 6–9	Dental claims
1, 2, 3, 4	Dental sealants for children at elevated caries risk, ages 10–14	Dental claims
2, 4	Caries Risk Assessments	Dental claims
1, 3, 4	Consecutive year dental exam at same office	Dental claims and PMF
1, 3, 4	Consecutive year dental exam at any office	Dental claims
1, 3, 4	Consecutive year any preventive/diagnostic care services at same office	Dental claims and PMF
1, 3, 4	Consecutive year any preventive/diagnostic care services at any office	Dental claims

Domain[a]	Outcome	Data source
B. Service use (outcome)		
1, 2, 3, 4	Restorative dental visits	Dental claims
1, 2, 3, 4	Treatment dental visit	Dental claims
1, 2, 3, 4	New cavitation lesions	Dental claims
1, 2, 3, 4	Outpatient ED visits for dental (nontraumatic) reasons	Medical claims
1, 2, 3, 4	Dental surgery under general anesthesia	Dental claims
C. Access to care (provider participation)		
1, 2, 3, 4	Number of enrolled Medi-Cal dental providers	PMF
1, 2, 3, 4	Number of offices with enrolled medical dental provider	PMF
1, 2, 3, 4	Number of dental providers seeing at least 10 Medi-Cal beneficiaries, ages 1–20	Dental claims and PMF
D. Expenditures		
1, 2, 3, 4	Preventive care expenditures	Dental claims
1, 2, 3, 4	Treatment care expenditures	Dental claims
1, 2, 3, 4	Diagnostic expenditures	Dental claims
1, 2, 3, 4	Per member per month cost	Dental claims
E. Placebo/Comparison outcomes		
1, 2, 3	Number of primary care well-child visits	Medical claims
1, 2, 3	Number of ED visits for non-dental reasons	Medical claims
1, 2, 3	Number of pediatrician Medi-Cal providers in county seeing at least 10 Medi-Cal beneficiaries, ages 1–20	Dental claims and PMF

[a]For Domain 4, expected outcomes being targeted vary by individual LDPPs.

ED = emergency department; LDPP = Local Dental Pilot Projects; PMF = Medi-Cal Provider Master File.

We will construct these outcome measures by using procedure codes, diagnosis codes, place of service codes, provider type, and category of service codes. In addition, we will construct measures of dental expenditures by using claims costs, capitation payments, and incentive payments made by the DTI. We will operationalize outcome variables by using publicly available measures with consensus definitions drawn from the scientific literature and the Medicaid/CHIP Child Core Set of quality measures.[10] Slight modifications may be necessary depending upon data availability issues and use of state-specific codes; therefore, final specifications will not be available until we obtain and review the state-provided claims and encounter data. We will also try to remain consistent with measures used by DHCS to monitor changes in these outcomes.

[10] For example, preventive dental visits will be defined by using the Medicaid/CHIP Child Core Set (CMS 2018).

2. Impact analysis, including comparison options and estimation approaches

We plan to estimate the impacts of the DTI by using a combination of interrupted time series (ITS) and difference-in-differences methods. Because the target population and interventions differ across domains, our proposed evaluation strategies also differ by domain. When possible, we will use multiple approaches within a domain. We will have greater confidence in any conclusions we draw if findings are consistent across strategies. Table III.2 presents the proposed primary and secondary strategies (if applicable) for each domain; these are described further below.

Domain 1. To evaluate the impact of Domain 1, our primary evaluation strategy will be an ITS methodology. This methodology tests for discrete changes in the levels and trends of outcomes at the start of the intervention period. We plan to analyze monthly outcome measures in the two years prior to the start of the intervention (January 1, 2016) to the intervention period itself. The assumption of this strategy is that there are no other interventions that would change levels and trends of outcomes at this time. To isolate the impact of Domain 1, we plan to focus on counties that are not participating in Domain 3.

To supplement this analysis, we plan to use a difference-in-differences estimation by using individuals ages 25 to 34 as a comparison group because they are not impacted by the DTI. This will allow us to test the ITS assumptions and analyze those outcomes that may not be immediately impacted by the incentive—specifically, long-term impacts on treatment service use. We also plan to do a “bunching” office-based analysis, which will analyze the distribution of increases in preventive services around the incentive cutoffs. This will allow us to estimate the elasticity of preventive service use with respect to payments and predict what the change in preventive service would be under different potential incentive payments.

Domains 2, 3, and 4. For the evaluation of Domains 2, 3, and 4, we plan to compare changes in the affected counties to changes among a set of comparison counties that did not receive that domain’s intervention. We will attempt to choose comparison counties so that they are otherwise similar to the intervention counties in terms of geography, participation in other domains, and baseline population characteristics, although it may be difficult to achieve similarity across all key characteristics due to the reach of the DTI.

For each difference-in-differences evaluation strategy, we plan to choose the year prior to the intervention as the baseline period and analyze changes in annualized outcomes with respect to that year. The primary identification assumption of difference-in-differences strategy is that, absent the intervention, the treatment group would have had similar trends as the comparison group. To check this assumption, we will look for parallel trends between the comparison and treatment groups in the two years prior to the intervention. For each domain, we hope to also conduct placebo tests by using the same methodology, but looking at outcomes that we do not expect to be affected by the

DTI. This will help us test the assumptions of our methodologies. If the placebo tests fail, we will reconsider our proposed methodological strategies.

Table III.2. Proposed impact estimation methodologies

	Methodology	Treatment group	Comparison group	Baseline period	Intervention period
A. Domain 1: Preventive service growth incentives					
1	Interrupted time series: Look at outcomes each month around start of intervention, identifying discrete changes in trends and levels caused by Domain 1.	Medi-Cal beneficiaries ages 0–20 in non-Domain 3 counties	n.a.	2014–2015	2016–2020
2	Difference-in-differences: Compare changes in outcomes from baseline to intervention among targeted sample (ages 0–20) with untreated sample, ages 25–34.	Medi-Cal beneficiaries ages 0–20 in non-Domain 3 counties	Medi-Cal beneficiaries ages 25–34 in non-Domain 3 counties	2014–2015	2016–2020
3	Bunching: Assess amount of excess mass at incentive cutoff points in distribution of percentage point increase for beneficiaries served at offices to estimate elasticity of service use with respect to incentives.	All offices serving Medi-Cal beneficiaries ages 0–20	n.a.	2014–2015	2016–2020
B. Domain 2: CRA incentives in pilot counties for 0–6 year olds					
1	Difference-in-differences estimation: Compare changes in outcomes from baseline to intervention of the targeted counties to comparable non-Domain 2 counties.	Medi-Cal beneficiaries ages 0–6 in active Domain 2 counties	Medi-Cal beneficiaries ages 0–6 in comparison counties	Baseline 1: 2014–2016 Baseline 2: 2016–2018	Intervention 1: 2017–2020 Intervention 2: 2019–2020
2	Heterogeneity of difference-in-differences: Compare estimates by risk level of beneficiary.	Medi-Cal beneficiaries ages 0–6 in active Domain 2 counties with high estimated (claims-based) risk for caries	Medi-Cal beneficiaries ages 0–6 in active Domain 2 counties with low estimated (claims-based) risk for caries	Baseline 1: 2014–2016 Baseline 2: 2016–2018	Intervention 1: 2017–2020 Intervention 2: 2019–2020

	Methodology	Treatment group	Comparison group	Baseline period	Intervention period
3	Cohort analysis: Compare outcomes of children who were previously exposed to Domain 2 by number of years of exposure.	Medi-Cal beneficiaries ages 7–10 in active Domain 2 counties and exposed to program for different number of years	Medi-Cal beneficiaries ages 7–10 in comparison counties	n.a.	Intervention: 2018–2020
C. Domain 3: Continuity of care					
1	Difference-in-differences estimation: Compare changes in outcomes from baseline to intervention of the targeted counties to comparable non-Domain 3 counties.	Medical beneficiaries ages 0–20 in Domain 3 counties	Medical beneficiaries ages 0–20 in comparison counties	2013–2015	Intervention 1: 2016–2020 Intervention 2: 2019–2020
D. Domain 4: LDPP					
1	Difference-in-differences estimation: Compare changes in outcomes from baseline to intervention of the targeted counties to comparable non-Domain 4 counties.	Targeted age population of the LDPP within the county	Targeted age population of the LDPP in comparable counties	Two years prior to start of intervention	Time after start of LDPP

CRA = caries risk assessment; LDPP = Local Dental Pilot Projects; n.a. = not applicable.

B. Survey of Medi-Cal dental providers

In fall 2019, we will field a survey to a sample of roughly 1,400 Medi-Cal dental providers from among those involved in Domains 1, 2, or 3. The survey questions will focus on provider experiences and perceptions of the DTI overall, the incentive payments, the CRA bundle (if relevant), continuity of care, and characteristics of their practice. The hypotheses and evaluation questions that the survey of providers will contribute to are specified in Appendix A, Table A.1.

The survey will be administered as a web survey with mail follow-up. It will be fielded over a four-month period and designed for online web administration on a computer, tablet, or smartphone with a target length of 15 minutes. We will target a response rate of 60 percent, which would yield 800 completed interviews. To encourage response, we will (1) administer the survey via web and mail; (2) mail and email multiple rounds of study materials to sampled providers (advance letter, reminder letters, and postcards); and (3) offer a $50 incentive to providers who complete the survey.

C. Survey of the caregivers of Medi-Cal beneficiaries

In fall 2020, we will field a survey to the parent or guardian of roughly 1,700 sampled children with Medi-Cal dental care coverage. The survey questions will focus on beneficiary experiences and perspectives on receiving dental care services, factors influencing use of services and continuity of care, and family characteristics. The hypotheses and evaluation questions that the survey of beneficiaries will contribute to are specified in Appendix A, Table A.1.

The survey will be administered as a computer-assisted telephone interview, with a target length of 25 minutes. It will be fielded over a four-month period. We will target a response rate of 60 percent, which would yield 1,000 completed interviews. To encourage response, we will (1) administer the survey in English and Spanish; (2) mail study materials to sampled beneficiaries (advance letter, reminder letters, and postcards); (3) make multiple rounds of dialing attempts (calling at various times of day and night and on weekends); and (4) offer a $20 incentive to beneficiaries who complete the survey.

D. Site visits and case studies of Domain 4 LDPPs

In summer 2020, we will conduct site visits to a sample of the LDPPs, which will be selected to reflect diversity in the types of interventions being tested, geographic location, and target populations.[11] We will approach each LDPP as a case study and extract insights and lessons learned about the experiences of lead agencies and partners in implementing their projects and the barriers and facilitators they observed in working toward the DTI goals. The in-person site visits will allow us to gather in-depth information from the multiple organizations and individuals involved in these community-level initiatives, to observe firsthand the level of collaboration and other activities involved, and to better understand the complex local market factors that could play a role in the pilot programs' implementation and impacts.

A team of two researchers will conduct two-day site visits to the LDPP communities. We will conduct six to eight interviews per LDPP. We will record the interviews and have them transcribed professionally for subsequent coding and analysis. In addition to producing individual case study summaries on each LDPP, we will also conduct a cross-case analysis to identify common themes and compare and contrast the approaches used by different LDPPs.

[11] We had initially planned to conduct site visits to 5 of the LDPPs, but we now think it would be beneficial to expand this component to include more projects. We are currently discussing plans with DHCS and will solidify the approach in the coming months.

Appendix A

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Table A.1. Evaluation questions, data sources, methods, and reporting

	Hypotheses and Evaluation Questions	Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
Hypothesis 1: Provider incentive payments are an effective method to encourage dental service office locations to provide preventive dental services to targeted Medi-Cal beneficiaries					
1	Do providers increase the number of Medi-Cal beneficiaries receiving preventive dental services after the demonstration is launched? How many additional Medi-Cal beneficiaries ages 0-20 receive preventive dental services?	1,3[12]	Medi-Cal eligibility, claims, and provider data. DHCS/DTI reporting data	Descriptive analysis of quantitative trends over time	Final
2	How many providers/service office locations in the state increase the number of Medi-Cal beneficiaries receiving preventive services? Are there patterns in the types of providers/service locations that increase services to Medi-Cal beneficiaries (by geographic area, SNC vs. DMC vs. FFS, other)?	1, 3	Medi-Cal eligibility, claims, and provider data. DHCS/DTI reporting data	Descriptive analysis of quantitative trends over time	Final
3	What is the impact of DTI incentive payments on the volume of preventive dental services delivered?	1,3	Medi-Cal eligibility, claims, and provider data.	Impact analysis	Final
4	What other factors besides the Domain 1 incentive payments influence the volume of preventive services provided to the targeted population of Medi-Cal beneficiaries?	1	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
5	What types of outreach and educational activities are happening (at state, local and provider level) to identify targeted Medi-Cal beneficiaries, encourage beneficiaries to seek care, encourage providers to increase the number of Medi-Cal children served?	1, 2, 3, 4	Document review Key informant interviews	Qualitative analysis	Interim Final

[12] We include Domain 3 here because efforts to increase continuity of care would also be expected to influence the use of preventive services.

Hypotheses and Evaluation Questions		Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
6	What barriers other than payment amounts influence provider ability or willingness to increase the number of targeted Medi-Cal beneficiaries served?	1, 2, 3, 4	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
Hypothesis 2: Provider incentive payments are an effective method for increasing Medi-Cal provider participation, which could improve access to care for children					
7	What is the number [and proportion, as data permit] of dental service office locations in each county that provide any preventive dental services to Medi-Cal children? How does this change time?	1, 2, 3, 4	Medi-Cal eligibility, claims, and provider data. DHCS/DTI reporting data	Descriptive analysis of quantitative trends over time	Interim (DHCS/DTI data only) Final
8	What is the number [and proportion, as data permit] of Medi-Cal participating dentists in each county providing preventive dental services to at least 10 Medi-Cal children? How does this change time?	1, 2, 3, 4	Medi-Cal eligibility, claims, and provider data. DHCS/DTI reporting data	Descriptive analysis of quantitative trends over time	Final
9	How many providers become newly enrolled as a Medi-Cal dental provider after the start of DTI? What are the characteristics of providers who newly enroll (geographic location, SNC vs. DMC vs. FFS, other)?	1, 2, 3, 4	Medi-Cal provider data	Descriptive analysis of quantitative trends over time	Final
10	What is the impact of incentive payments on provider participation? How do impacts vary for different types of providers and by the level of the incentive payments?	1, 2, 3	DHCS/Medi-Cal eligibility/enrollment, claims/encounter, and provider data	Impact analysis	Final
11	How do providers view the role of the incentive payments in influencing the decision to become a Medi-Cal dental provider?	1, 2, 3, 4	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
12	What types of outreach and educational activities are happening at the state and local level to encourage providers to participate in Medi-Cal?	1, 2, 3, 4	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final

	Hypotheses and Evaluation Questions	Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
13	What barriers other than payment amounts influence provider willingness to participate in Medi-Cal?	1, 2, 3, 4	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
Hypothesis 3: Domain 2 incentive payments are effective in encouraging providers to perform CRA for the targeted population and to ensure completion of appropriate treatment modalities for the effective management of early childhood caries					
14	How many Medi-Cal providers [as data permit, what portion] in Domain 2 counties participate in the pilot program?	2	DHCS Domain 2 reporting data	Descriptive analysis of quantitative data	Interim (DHCS/DTI data only) Final
15	How many [as data permit, what portion] of providers remain in the Domain 2 pilot program in subsequent years?	2	DHCS Domain 2 reporting data	Descriptive analysis of quantitative data	Final
16	What factors influence provider decisions to participate in the Domain 2 pilot program?	2	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
17	Among participating practices, what is the distribution of high, medium and low risk beneficiaries? How does this distribution change over time?	2	DHCS/DTI reporting data	Descriptive analysis of quantitative data	Final
18	How does the frequency of service use vary across the risk categories? Is service use higher among children in categories authorized to receive more frequent services?	2	Medi-Cal eligibility, claims, and provider data. DHCS/DTI reporting data	Descriptive analysis of quantitative data	Final
19	What do providers think about the service levels authorized for each risk category?	2	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final

	Hypotheses and Evaluation Questions	Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
20	How do beneficiaries respond to the recommendations for increased visit frequency? Are there more no-shows in the moderate and high-risk groups?	2	Provider survey Key informant interviews Beneficiary survey	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
21	How do providers view the reimbursement amounts for CRA and related domain 2 services? How do the amounts compare to their costs?	2	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
22	How do providers view the required training for the CRA bundle package?	2	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final
Hypothesis 4: Use of CRA bundle package (CRA, development of treatment plan, nutritional counseling and motivational interviewing to influence behavior of child/caregivers) will support more effective management of carries and reduced expenditures through greater use of preventive services and non-invasive treatment approaches					
23	How do beneficiaries/caregivers view the counseling and educational components? Do they see it as worthwhile? Has it led to any changes in their behavior?	2	Beneficiary survey	Descriptive analysis of survey data	Final
24	How do beneficiaries/caregivers view the value of dental care more generally? Are they happy with the care they are receiving? Are they having trouble getting any services that they think they need?	2	Beneficiary survey	Descriptive analysis of survey data	Final
25	What is the ratio of preventive to restorative services among the Medi-Cal target population and how does this change over time?	2	Medi-Cal eligibility, claims, and provider data.	Descriptive analysis of quantitative data	Final
26	How do providers view the role of the CRA bundle and incentives in influencing the types of services provided to targeted Medi-Cal beneficiaries?	2	Provider survey Key informant interviews	Descriptive analysis integrating survey and qualitative data	Interim (key informant interviews only) Final

	Hypotheses and Evaluation Questions	Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
Hypothesis 5: Utilization of and expenditures for dental related emergency room visits, and for dental surgery with general anesthesia will decline among the Domain 2 target population					
27	How does the volume of dental related ED visits change over time for targeted Domain 2 Medi-Cal beneficiaries?	2	Medi-Cal eligibility, claims, and provider data	Descriptive analysis of quantitative data	Final
28	How do expenditures for dental related ED visits change over time for targeted Domain 2 Medi-Cal beneficiaries?	2	Medi-Cal eligibility, claims, and provider data	Descriptive analysis of quantitative data	Final
29	How does use of dental surgery with general anesthesia change over time among Domain 2 targeted Medi-Cal beneficiaries?	2	Medi-Cal eligibility, claims, and provider data	Descriptive analysis of quantitative data	Final
30	How do expenditures for dental surgery with general anesthesia change over time among Domain 2 targeted Medi-Cal beneficiaries?	2	Medi-Cal eligibility, claims, and provider data	Descriptive analysis of quantitative data	Final
Hypothesis 6: Incentive payments are an effective method of promoting continuity of care for targeted children					
31	What are providers/practices doing specifically to try and increase continuity of care?	3	Provider survey Key informant interviews	Descriptive analysis integrating quantitative and qualitative data	Interim (key informant interviews only) Final
32	What are the main factors influencing continuity of care? What behaviors or circumstances would need to change to support better continuity?	3	Provider survey Key informant interviews Beneficiary survey	Descriptive analysis integrating quantitative and qualitative data	Interim (key informant interviews only) Final
33	How do the incentive payments influence those behaviors and circumstances? Are the incentive amounts appropriate?	3	Provider survey Key informant interviews	Descriptive analysis integrating quantitative and qualitative data	Interim (key informant interviews only) Final
34	What else would be helpful in addressing barriers to continuity of care?	3	Provider survey Key informant interviews Beneficiary survey	Descriptive analysis integrating quantitative and qualitative data	Interim (key informant interviews only) Final

	Hypotheses and Evaluation Questions	Relevant Domain(s)	Data Source(s)	Analytic Method	Evaluation Report(s)
35	What portion of Medi-Cal beneficiaries were served by the same dental office for 2, 3, 4, 5, and 6 continuous years? How does this proportion change over time?	3	Medi-Cal eligibility, claims, and provider data	Descriptive analysis of quantitative data	Final
36	What is the impact of incentive payments on continuity of care? How does this vary for different types of providers	3	Medi-Cal eligibility, claims, and provider data	Impact analysis	Final
37	How does continuity of care vary across different types of providers (geographic location SNC v FFS, ratio of preventive to restorative services, other)? How does it vary across different subgroups of children?	3	Medi-Cal eligibility, claims, and provider data.	Descriptive analysis of quantitative data	Final
Hypothesis 7: Domain 1 and 3 incentives for preventive services and continuity of care provide a more favorable cost benefit ratio than Domain 2 CRA incentives					
38	What are the costs of incentive payments by domain?	1,2,3	DHCS/DTI incentive payment data	Cost analysis	Final
39	What are the benefits/savings associated with domain 1 and 3 incentives (changes in utilization and expenditures)?	1,3	Medi-Cal eligibility, claims, and provider data	Benefit/savings analysis	Final
40	What are the benefits/savings associated with domain 2 (changes in utilization and expenditures)?	2	Medi-Cal eligibility, claims, and provider data	Benefit/savings analysis	Final
41	How does the cost-benefit ratio for domains 1 and 3 compare with the cost- benefit ratio for domain 2?	1,2,3	DHCS/DTI incentive payment data Medi-Cal eligibility, claims, and provider data	Cost benefit analysis	Final

Note: Domain 1 is using incentives to promote preventive service utilization among children ages 1 through 20; Domain 2 is testing a bundled package of tools and services to reduce the incidence of dental caries and improve oral health among children ages 1 through 6; Domain 3 is providing incentives to increase continuity of care for children ages 1 through 20; Domain 4 is funding local pilot projects that are testing innovative strategies for achieving the goals of one or more of the other domains.

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