

**Estimating the Cost of Introducing a Medicaid Adult Dental Benefit in Texas STAR Plus Program**

Cassandra Yarbrough, M.P.P.

**Background**

Previous analysis estimated the cost of implementing an extensive Medicaid adult dental benefit in states that provide either emergency-only or no dental benefits to their adult Medicaid population.<sup>1</sup> The American Dental Association’s Health Policy Institute (HPI) collaborated with Executive Director Dennis Borel and Director of Communications Laura Perna of the Coalition of Texans with Disabilities to estimate the cost of introducing a Medicaid adult dental benefit in Texas. We estimated the cost of introducing a limited Medicaid adult dental benefit in Texas’s STAR Plus program under various reimbursement and utilization assumptions. We also explored potential cost savings attributable to a reduction in dental emergency department (ED) visits, hospital utilization and healthcare cost savings.

**Results**

Based on information from the Coalition of Texans with Disabilities, we estimate there are approximately 402,500 adult Medicaid enrollees in the STAR Plus program. The estimated total annual cost of providing a limited Medicaid adult dental benefit in Texas’s STAR Plus program is between \$50.6 million and \$54.6 million. The state share of this cost would be between \$19.7 million and \$21.3 million. See Table 1 for more details on these estimates.

**Table 1:** Estimated Total Cost of Implementing a Limited Medicaid Adult Dental Benefit in Texas

Scenario	Total Spend	Federal Share (60.9%)	State Share (39.1%)
1	\$54,551,957	\$33,216,687	\$21,335,271
2	\$50,551,481	\$30,780,797	\$19,770,684

Potential cost savings from reduced ED visits for non-traumatic dental conditions among the STAR Plus population are estimated to be \$5,489,814. We also estimate that there are approximately 128.8 inpatient hospital admissions resulting from non-traumatic dental conditions among the STAR Plus population. These admissions amount to charges of approximately \$5,504,109 per year. While charges do not reflect actual cost to the Medicaid program, there are likely significant potential savings to the program if these admissions are successfully avoided as well. Potential savings from reduced medical costs among STAR Plus-enrolled adult diabetics resulting from increased access to dental care are estimated to be \$342,930 to \$4,869,606 per year. See the Data & Methods section for more details on these estimates.

There are additional potential savings the state may realize from covering limited dental services for STAR Plus-enrolled adults. For example, 50.3 percent of all patients that present to the ED for non-traumatic dental pain are prescribed an opioid.<sup>2</sup> These prescriptions may be avoidable if these dental patients are treated in the dental office, or are able to avoid dental pain altogether due to increased access to preventive and routine dental services through Medicaid dental coverage. Further, the National Association of Dental Plans has found additional potential savings among Medicaid adults with conditions such as coronary heart disease, asthma, and high blood pressure.<sup>3</sup>

## **Data & Methods**

In earlier analysis, the Health Policy Institute estimated the cost of introducing a Medicaid adult dental benefit in 22 states that did not provide any dental benefits beyond emergency procedures.<sup>1</sup> We used the methodology from our earlier brief, updated with more current data, to estimate the cost associated with implementing a limited Medicaid adult dental benefit in the state of Texas. We also used current utilization and dental services expenditure data from various Texas Medicaid programs, including the STAR+PLUS, STAR+PLUS HCBS, the Texas Dual Eligible Integrated Care Demonstration Project, the Intellectual or Developmental Disability 1915(c) Waiver Programs, and other community-based programs to estimate the cost associated with implementing a limited Medicaid adult dental benefit in Texas.<sup>4</sup>

We estimated the number of adults enrolled in Texas' STAR Plus program by using figures provided by the Coalition for Texans with Disabilities.<sup>5</sup> The Coalition for Texans with Disabilities draws on enrollment figures from the Texas Health and Human Services Commission, estimating that the number of adults enrolled in the Texas Medicaid program totals 630,000. They then adjust this enrollment total downward to account for Texas Medicaid adults that are in certain waiver and demonstration programs, and are thus already receiving a dental benefit. The Coalition for Texans with Disabilities estimates that the total number of Texas Medicaid adults impacted by the proposed legislation is around 402,500. This is the enrollment number we use in our estimates.

We created two scenarios for our modeling. The scenarios have different assumptions for adult dental care utilization, dental expenditure per patient, and reimbursement rates to dental care providers. The scenarios are summarized in Table 2.

**Table 2:** Assumptions for Alternative Medicaid Adult Dental Benefit Expenditure Scenarios

Assumptions	Limited Medicaid Adult Dental Benefit	
	Scenario 1	Scenario 2
Percentage of Medicaid adults with a dental visit	Average across states that provide a limited adult dental benefit in Medicaid (2012 MEPS): 22.2%	
Dental expenditure per year per Medicaid dental patient	Average dental expenditure per Medicaid-enrolled individual with a dental visit in states that provide a limited adult dental benefit in Medicaid (2012 MEPS): \$398.58	
Medicaid reimbursement rate for adult dental care services	60% of typical private dental benefits plan charges (2013 HPI)	55.6% of typical private dental benefits plan charges (2016 rate for child dental care services)

To estimate dental care utilization among Medicaid adults, we used the average dental care utilization rate among Medicaid-enrolled adults in states that currently provide a limited Medicaid adult dental benefit. We estimated this utilization rate using 2012 data from the Medical Expenditure Panel Survey (MEPS). These data were provided via personal correspondence from Dr. Richard Manski at the University of Maryland in January 2015. We requested Dr. Manski to calculate the percentage of Medicaid adults ages 21 through 64 with a dental visit in the past 12 months. Dr. Manski calculated Medicaid dental utilization rates for four groups of states based on the level of dental benefits covered by the state’s Medicaid program. States were grouped based on the level of dental benefits covered by the Medicaid program in 2012 (see Table 3 for states with limited Medicaid adult dental benefits in 2012). The average percentage of Medicaid adults with a dental visit in a year across limited states in 2012 was 22.2 percent. Dental visits that took place in an emergency department were not included in the estimate.

**Table 3:** States with Limited Medicaid Adult Dental Benefits

	Limited
Definition	A benefit that covers 100 or fewer dental procedures and has an expenditure cap at or below \$1,000 per patient per year.
States	AR, DC, IN, KY, LA, MA, MI, MN, NE, NJ, PA, SD, VA, VT, WY

Our estimate for dental expenditure per patient per year was also based on an analysis of MEPS data from 2012. Specifically, we used average total dental expenditure among Medicaid-enrolled adults with a dental visit in the past year, averaged across states that provided a limited adult dental benefit in Medicaid. The

2012 MEPS data yield an average expenditure level of \$398.58 per dental patient per year in states with a limited Medicaid adult dental benefit. Dr. Richard Manski provided this analysis through personal correspondence in July 2015.

We adjusted the dental expenditure estimates in two ways. For the first scenario, we set reimbursement for Medicaid adult dental services at the same level as child dental services in Texas. For this assumption, we used 2016 child dental care fee-for-service reimbursement rates in Texas that were previously calculated by the Health Policy Institute.<sup>6</sup> In this research, we found that dentists participating the state's fee-for-service program received 55.6 percent of their typical charges. For the second scenario, we set reimbursement for Medicaid adult dental services at 60 percent of typical private dental benefits plan charges.

In summary, to calculate the total incremental expenditure of implementing a Medicaid adult dental benefit under scenarios 1 and 2, we used the following formula:

$$\text{Expenditure} = \text{Enrollment} * \text{Utilization Rate} * \text{Spending per User} * \text{Reimbursement Rate Adjustment}$$

All estimates were inflated to 2018 dollars using the Consumer Price Index (CPI-U).<sup>7</sup>

To determine the potential federal and state shares of this estimated expenditure, we used the federal fiscal year 2020 federal matching shares for Medicaid, CHIP, and Aid to Needy, Aged, Blind or Disabled Persons from the U.S. Department of Health and Human Services as reported in the Federal Register.<sup>8</sup> This report includes the federal medical assistance percentages (FMAP) effective October 1, 2019 through September 30, 2020. The fiscal year 2020 FMAP for Texas is 60.9 percent. Thus, the state of Texas' share would be 39.1 percent. Using these data, we approximated the percentage of federal versus state spending and applied these percentages to estimate the cost of implementing a Medicaid adult dental benefit to the federal government and to the state of Texas.

#### *Potential Emergency Department Savings*

To estimate potential emergency department (ED) savings, we drew on 2016 analysis conducted by the Texas Health Institute.<sup>9</sup> This analysis specifically examined ED visits and inpatient hospital admissions for non-traumatic dental conditions (NTDC), the majority of which were concentrated among adults.

We compared the Texas Health Institute estimate of NTDC ED visits to the total number of Texas ED visits for dental conditions among Medicaid enrollees in 2016. According to the Repository of Oral Health Data Evaluation & Outcomes, there were 39,003 ED visits for dental conditions among Medicaid enrollees in 2016.<sup>10</sup> The Texas Health Institute determined that 25,647 of these visits, or 65.8 percent, were non-traumatic and could have been addressed in a dental office or clinic. This percentage is below the Health Policy Institute's national estimate of avoidable ED visits for dental conditions, suggesting that the estimate is

conservative. Thus, we feel confident that the Texas Health Institute's analysis is sound but potentially understates avoidable ED use for dental conditions.

The Texas Health Institute calculated the rate at which NTDC ED visits and admissions occurred among Medicaid adults in 2016. Specifically, the Texas Health Institute found that there were 1,821 NTDC ED visits per 100,000 Medicaid adults, and 32 admissions per 100,000 Medicaid adults. We applied these rates to the STAR Plus enrollment total to estimate the total number of NTDC ED visits and admissions for this population. This yielded approximately  $((1,821/100,000) \times 402,500) = 7,329.5$  NTDC ED visits and  $((32/100,000) \times 402,500) = 128.8$  NTDC admissions among STAR Plus Medicaid-enrolled adults. The Texas Health Institute calculated the average cost of an NTDC ED visit among Medicaid enrollees at \$1,692 and the average cost of an NTDC admission among Medicaid enrollees at \$42,726. If these NTDC encounters are successfully avoided, potential annual savings amount to:

$$\text{ED Visits: } \$1,692 \times 7,329.5 \text{ ED visits} = \$12,401,556$$

$$\text{Inpatient Hospital Admissions: } \$42,726 \times 128.8 \text{ admissions} = \$5,503,109$$

Previous ED analysis suggests that the average national cost of an ED visit for an avoidable dental condition is \$749.<sup>11</sup> Using this figure, we estimate potential cost savings of  $(749 \times 7,329.5) = \$5,489,814$  if these ED visits are successfully avoided. We do not have a comparable estimate for inpatient hospital admissions.

#### *Potential Savings Due to Reduced Medical Care Costs among Diabetics with Increased Access to Dental Care*

To estimate potential savings due to reduced medical care costs among diabetics with increased access to dental care, we drew on data from the American Diabetes Association as well as savings estimates from prior analysis. According to the American Diabetes Association, 14.2 percent of Texas adults have diabetes.<sup>12</sup> We assumed this rate of incidence was applicable to the adult Medicaid population, as national reports indicate that the prevalence of diabetes in the adult Medicaid population mirrors the prevalence in the overall U.S. adult population.<sup>13,14</sup> Using Medicaid enrollment numbers from CMS, there were approximately 57,155 Medicaid-enrolled adults in Texas with diabetes as of December 2018. To be conservative, we estimated that 15 percent of these adults had a dental visit prior to Medicaid adult dental benefits being implemented based on an estimate provided by Dr. Richard Manski through personal correspondence in May 2016. This rate may be higher based on dental utilization data among Medicaid-enrolled adults provided by the Texas Health and Human Services Commission. Dental care use increases by 20 percent when an adult dental benefit is introduced.<sup>15</sup> Thus, we estimated that an additional 3 percent of Medicaid-enrolled adults with diabetes would visit a dentist following the implementation of a Medicaid adult dental benefit  $(1.15 \times 20\% = 3\%)$ . Medical cost savings from diabetic adults visiting the dentist for periodontal treatment range from \$200<sup>16</sup> to \$2,840 per year per patient.<sup>17</sup> Thus, the total number of diabetic Medicaid adult enrollees visiting the dentist

would be  $57,155 \times 3\% = 1,714.7$ . This may result in a range of cost savings between \$342,930.00 ( $\$200 \times 1,714.7$ ) and \$4,869,606.00 ( $\$2,840 \times 1,714.7$ ).

---

<sup>1</sup> Yarbrough C, Vujicic M, Nasseh K. Estimating the cost of introducing a Medicaid adult dental benefit in 22 states. Health Policy Institute Research Brief. American Dental Association. March 2016. Available from: [https://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief\\_0316\\_1.pdf?la=en](https://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0316_1.pdf?la=en). Accessed February 21, 2019.

<sup>2</sup> Patel N, Afshar S. Addressing the high rate of opioid prescriptions for dental pain in the emergency department. *The American Journal of Emergency Medicine*. 2018;36(1):138-139.

<sup>3</sup> National Association of Dental Plans. NADP analysis shows adults with Medicaid preventive dental benefits have lower medical costs for chronic conditions. November 23, 2017.

<sup>4</sup> Texas Health and Human Services. Dental services for adults with disabilities report. December 1, 2018. Accessed April 11, 2019.

<sup>5</sup> Personal communication via email with the Coalition for Texans with Disabilities. Accessed April 8, 2019.

<sup>6</sup> Gupta N, Yarbrough C, Vujicic M, Blatz A, Harrison B. Medicaid fee-for-service reimbursement rates for child and adult dental care services for all states, 2016. Health Policy Institute Research Brief. American Dental Association. April 2017. Available from: [http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief\\_0417\\_1.pdf](http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0417_1.pdf). Accessed February 21, 2019.

<sup>7</sup> U.S. Bureau of Labor Statistics, Consumer Price Index-All Consumers. Available from: <https://data.bls.gov/cgi-bin/cpicalc.pl>. Accessed February 21, 2019.

<sup>8</sup> Federal Financial Participation in State Assistance Expenditures; Federal Matching Shares for Medicaid, the Children's Health Insurance Program, and Aid to Needy Aged, Blind, or Disabled Persons for October 1, 2019 Through September 30, 2020, 83 Fed. Reg. No. 229 (November 28, 2018). *Federal Register: The Daily Journal of the United States*. Accessed April 11, 2019.

<sup>9</sup> Texas Health Institute. Emergency department and inpatient hospitalization for non-traumatic dental conditions in Texas. October 2018.

<sup>10</sup> Repository of Oral Health Data Evaluation & Outcomes. Dental-Related Emergency Department Visits. Available from: <https://rohdeo.uthscsa.edu/explore-data/>. Accessed April 11, 2019.

<sup>11</sup> Wall T, Vujicic M. Emergency department visits for dental conditions fell in 2013. Health Policy Institute Research Brief. American Dental Association. February 2016. Available from: [https://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief\\_0216\\_1.pdf?la=en](https://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0216_1.pdf?la=en). Accessed April 19, 2019.

<sup>12</sup> American Diabetes Association. The burden of diabetes in Texas. Available from: <http://main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/texas.pdf>. Accessed April 11, 2019.

<sup>13</sup> The Henry J. Kaiser Family Foundation. The role of Medicaid for people with diabetes. November 2012. Available from: [https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8383\\_d.pdf](https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8383_d.pdf). Accessed April 11, 2019.

---

<sup>14</sup> Centers for Disease Control and Prevention. New CDC report: more than 100 million Americans have diabetes or prediabetes. July 18, 2017. Available from: <https://www.cdc.gov/media/releases/2017/p0718-diabetes-report.html>. Accessed April 11, 2019.

<sup>15</sup> Singhal A, Caplan D, Jones M, et al. Eliminating Medicaid adult dental coverage in California led to increased dental emergency visits and associated costs. *Health Affairs*. 2015;34(5): 749-756.

<sup>16</sup> Nasseh K, Vujicic M, Glick M. The relationship between periodontal interventions and healthcare costs and utilization. Evidence from an integrated dental, medical, and pharmacy commercial claims database. *Health Econ*. 2017;26: 519-527.

<sup>17</sup> Jeffcoat M, et al. Impact of periodontal therapy on general health. *Am J Prev Med*. 2014;47(2): 166-174.