MILLIMAN REPORT

Preventing diabetes in Texas

Insights from the literature on Diabetes Prevention Program effectiveness

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Bridget Darby, MS
Stoddard Davenport, MPH

Commissioned by the Episcopal Health Foundation

Milliman

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Executive summary

The Episcopal Health Foundation engaged Milliman to summarize the existing literature on the Diabetes Prevention Program (DPP), including the Medicare Diabetes Prevention Program (MDPP) and state-level Medicaid DPPs, and to provide an assessment of the state of evidence for the effectiveness of these programs. This includes any particular program features or characteristics that may be associated with outcomes that would inform the type of programming that may be appropriate and effective for the Texas Medicaid population. This review complements a study commissioned by the Episcopal Health Foundation to describe the cost of type 2 diabetes mellitus to the Texas Medicaid program published in November 2024.[1]

BACKGROUND

The DPP is a Centers for Disease Control and Prevention (CDC) evidence-based lifestyle and health behavior change program, credentialed by the U.S. Centers for Disease Control and Prevention (CDC), aimed at preventing diabetes by targeting at-risk populations.

The program began as a clinical trial and evolved over time as the program was implemented in real-world settings. In its current form, the DPP curriculum includes education on improving eating habits, increasing exercise, managing stress, and improving sleep habits. Participants attend 16 weekly groups sessions over the first six months, followed by six monthly follow-up sessions. Participants must also do a weigh-in one time per week. The target weight loss is 5% of baseline body weight and 150 minutes per week of physical activity over the course of the 12-month program.

The National DPP operates across the U.S., and the Centers for Medicaid and Medicare Services (CMS) operates a similar program for the Medicare population called the Medicare Diabetes Prevention Program (MDPP), which is offered to Medicare beneficiaries across the United States at zero cost to eligible beneficiaries. Texas currently runs a National DPP program primarily enrolling under- and uninsured populations through the Texas Department of State Health Services (DSHS). These programs are funded through state general revenue, federal grant funding, and a cooperative agreement with the CDC. Versions of the program are also offered through some commercial and state Medicaid health plan benefits.

Reimbursement models for the National DPP may include any combination of fee-for-service (FFS) payments, attendance milestone payments (reimbursement paid after a member reaches a set number of sessions), and performance-based payments, such as reimbursement tied to weight loss among participants. The MDPP uses a combination of FFS payments for services and performance payments for weight loss. Some state Medicaid programs include a pay-for-performance component, but most states with a DPP use FFS payments.

KEY TAKEAWAYS FROM THE LITERATURE

- The participant population skews female and older than 45 years of age across all iterations of the program.
- DPPs have been effective in achieving modest weight loss for a subset of participants. Participants across different iterations of the program lost, on average, between 3% and 5% of their starting body weight by the end of 12 months. However, participants often regain at least some of this weight after the program ends.
- Weight loss during the program is positively associated with the number of program sessions attended: Individuals who attend more sessions lose more weight.
- Telehealth and online DPPs have been found to be as effective as in-person programs with regard to weight loss.
- There is some evidence that the program also improves blood glucose levels and cardiovascular outcomes, but further research is needed.
- In a recent program evaluation of the MDPP commissioned by CMS, cost savings associated with the MDPP were not statistically significant.
- Real-world implementations of DPPs have faced challenges such as:
  - Low participant enrollment and retention related to limited access to DPP providers, clinician awareness of prediabetes risks, and availability of the program, resulting in low provider referral rates and barriers to attendance such as transportation and class schedules.

  - Low DPP provider supply, with providers citing low reimbursement rates relative to program implementation and delivery costs
- Possible strategies to address these challenges may include:
  - Increasing patient and provider awareness of the DPP and diabetes risk factors, implementing systematic screening and referral, and offering multiple modes of program delivery.
  - Offering benefits that address non-medical barriers that may limit effective participation in the program (such as transportation to in-person sessions and providing groceries or food boxes to support nutritional goals), tailoring programming to the target population, and providing financial incentives for participation.
  - Selecting a reimbursement approach that reduces the administrative burden and provides more attractive compensation to providers for the service.

Introduction

The Episcopal Health Foundation engaged Milliman to complete a review of current state-level diabetes prevention programs (DPPs) as a part of a larger study describing the healthcare costs and demographics of Texas Medicaid beneficiaries with type 2 diabetes or select risk factors.[1] Diabetes prevention is a priority for the Episcopal Health Foundation.

The purpose of this review is to summarize the existing literature on the Diabetes Prevention Program (DPP) including the Medicare Diabetes Prevention Program (MDPP) and state-level Medicaid DPPs to understand the state of evidence for program effectiveness, including any data available regarding particular program features or characteristics that would inform the type of programming that may be appropriate and effective for the Texas Medicaid population.

The National DPP is an evidence-based lifestyle and health behavior change program, credentialed by the Centers for Disease Control and Prevention (CDC), that operates nationwide, aimed at preventing diabetes by targeting the population at risk for developing the disease.[2] The Centers for Medicaid and Medicare Services (CMS) operates the MDPP, which delivers the program to Medicare beneficiaries across the United States at zero cost to eligible beneficiaries

Texas currently runs a National DPP program primarily enrolling under- and uninsured populations through the Texas Department of State Health Services (DSHS).[3] These programs are funded through state general revenue, federal grant funding, and a cooperative agreement with the CDC. The MDPP also operates in Texas.

BRIEF HISTORY AND CURRENT DESIGN OF THE DPP

Versions of the DPP have been running for the past three decades in the US.

A clinical trial was conducted between 1996 and 2001. This trial included 16 one-on-one health coaching sessions conducted by trained specialists including nutritionists, exercise physiologists, or behavioral psychologists over the course of 24 weeks, followed by every-other-week in-person maintenance sessions and telephonic support between sessions.[4] Participants also had free access to exercise facilities and meal replacements. Targets for the program included losing 7% of starting body weight and exercising for 150 minutes per week.

After the clinical trial showed that the program reduced the incidence of diabetes, CMS conducted a national pilot program to test scalable, less resource-intensive versions of the DPP offered to Medicare beneficiaries, delivered through 17 YMCAs across the country from 2012 to 2016 before being offered as the MDPP to the entire Medicare population in 2018.[5]

The National DPP curriculum includes education on improving eating habits, increasing exercise, managing stress, and improving sleep habits. Participants attend 16 weekly groups sessions over the first six months, followed by six monthly follow-up sessions. Participants must also do a weigh-in one time per week. The target weight loss is 5% of baseline body weight over the course of the program and 150 minutes per week of physical activity, over the 12-month program. The Medicare program has changed over time. The program was originally designed to be two years. The first year followed the CDC curriculum and the second year was more flexible and did not have a set curriculum. The Medicare program has since been reduced to one year after evaluation revealed that attrition was high after 12 months.[6]

Program eligibility typically includes adult beneficiaries at risk of diabetes as defined by a body mass index (BMI) of greater than 25 and/or a prediabetes diagnosis or an hbA1c of 5.7% to 6.4%.

DPP providers, sometimes referred to as suppliers, must meet standards for CDC recognition to deliver the program.[7] There are a range of options for what organizations can become DPP providers, including health systems, community health clinics, public health departments, businesses, pharmacies, digital health platforms, insurers, managed care organizations (MCOs), and community-based organizations. Texas DSHS partners with academic medical centers, community health centers, pharmacies, and community organizations such as the YMCA.[8]

The DPP is administered by lifestyle coaches who are trained to deliver the program. Lifestyle coaches can be clinicians, nurses, community health workers, or community members. Studies have shown that there is no difference

in health outcomes for participants who are coached by a clinician or a trained community member.[9] Depending on the scale of the program, staff may only be allocated to the program part-time. Providers also need to staff a program coordinator to support daily operations and a data preparer to manage data collection and reporting. These may be fulfilled by the same person or different people depending on the scale of the program.[10]

The CDC has approved the use of virtual, telehealth, and in-person versions of the program based on evidence from research studies that virtual programs are as effective as in-person.[11] However, CMS only has a temporary rule in place from the COVID-19 Public Health Emergency to allow for telehealth instruction to be reimbursed through Medicare.[5] The extension is set to continue through December 31, 2027, at which point the program must return to in-person instruction only.

Reimbursement models for the National DPP may include any combination of FFS payments, attendance milestone payments (reimbursement paid after a member reaches a set number of sessions), and performance-based payments, such as reimbursement tied to weight loss among participants. The MDPP uses a combination of FFS payments for services and performance payments for weight loss. Prior to December 1, 2023, MDPP used attendance milestone payments rather than FFS payments per session.[12]

DPP IMPLEMENTATIONS OUTSIDE OF MEDICARE

The National DPP program has also been offered through some commercial and state Medicaid health plan benefits. Program design, including length, providers, treatment modality, and participant eligibility vary across markets. Figure 1 describes program designs for some of the active state Medicaid DPPs. State Medicaid or commercial plans may apply additional criteria to define the at-risk population.

Of the states that have implemented the DPP through Medicaid, Montana, Minnesota, Missouri, Ohio, Oregon, South Dakota, Utah, and Wyoming all use FFS payments, and California, Illinois, Maryland, Michigan, and, New York payment models include at least some performance-based payment.[13] Reimbursement for a virtual DPP program varies across state Medicaid programs and commercial health plans.[13]

States that also operate DPP programs for target populations outside of Medicare typically rely on additional federal and state grant funding sources, including CDC funds. Texas currently operates a DPP that is funded through these sources.

The CDC continues to develop the National DPP curriculum, support research, and fund state government DPPs.[2,14]

FIGURE 1: STATE MEDICAID DPP SUMMARY

STATE	PROGRAM ELIGIBILITY	DELIVERY METHOD	PROGRAM LENGTH
MDPP	• Overweight (BMI ≥25; ≥23 if Asian) and • Have prediabetes documented by a clinical lab test and • Have no previous diagnosis of type 1 or type 2 diabetes and • Have not received MDPP services previously.	In-person; virtual through Dec. 31, 2027	Pre-2023: 24 months As of Jan. 1, 2023: 12 months

Ohio	• Be at least 18 years old and
	• Overweight (BMI ≥25; ≥23 if Asian) and
	• Have no previous diagnosis of type 1 or type 2 diabetes and
	• Not be pregnant and
	• Have at least one of the following:
	  ○ prediabetes diagnosis
	  ○ history of gestational diabetes
	  ○ high risk result on prediabetes test.
		In-person; online	24 months

Montana	• Be at least 18 years old and • Overweight (BMI ≥25; ≥23 if Asian) and • Have at least one of the following:	In-person; online	12 months

STATE	PROGRAM ELIGIBILITY	DELIVERY METHOD	PROGRAM LENGTH
	○ prediabetes diagnosis ○ history of gestational diabetes ○ high risk result on prediabetes test ○ blood pressure of at least 130/80 mmHg or treatment ○ triglycerides greater than 150 mg/dL ○ LDL cholesterol greater than 130 mg/dL or treatment ○ HDL cholesterol less than 40 mg/dL for men, less than 50 mg/dL for women. • Self-referral with physician approval required before starting the program.		
Missouri	• Be at least 21 years old and • Overweight and • Have elevated blood glucose level. • Services require a referral or prescription from a physician or other licensed practitioner.	In-person; online; telehealth	12 months + 4 maintenance sessions
Pennsylvania	Referral from physician. Requirement is determined by individual MCOs.	In-person; online; combination	12 months
South Dakota	Provider must check eligibility through a state online portal.	In-person; online	12 months
Utah	Information unavailable.	In-person; online	12 months
Oregon	• Be at least 18 years old and • Be overweight (BMI ≥25; ≥23 if Asian) and • Have no previous diagnosis of type 1 or type 2 diabetes and • Not have end-stage renal disease and • Have a blood test result in the prediabetes range within the past year OR be previously diagnosed with gestational diabetes.	In-person; online	24 months
Wyoming	• Can be under 18 • Must have received a blood test with a prediabetes diagnosis within past year or • Have a previous gestational diabetes diagnosis.	In-person preferred; telehealth available	12 months

Source: Table adapted from coveragetoolkit.org.

PROGRAM DEMOGRAPHICS

Across various DPP implementations, program participants tend to be female, non-Hispanic white, and over 45 years old.[15,16,17,18] In an evaluation of the National DPP between 2012 and 2016, 80.3% of participants were female and the average age of participants was found to be 55.1 years, with 19.9% of participants between 18 and 44 years and 56.0% of participants between 45 and 64 years.[18] In the second evaluation of the MDPP, the participants were 75% female and 60% non-Hispanic white, 51% had attended at least four years of college, over 70% had obesity, and 68% were between 65 and 74 years old.[6]

In the Medicaid demonstration conducted in Maryland and Oregon, 50.2% of participants were non-Hispanic Black, 76.6% were female, and the average age was 45 years old.[19] Montana reported that 84% of participants were female, with a mean age of 51.7 years, in a study comparing the effectiveness of telehealth and in-person DPP instruction in a rural setting for Medicaid beneficiaries.[20]

Milliman conducted an analysis of the demographic characteristics of prediabetic and diabetic populations within Texas Medicaid and described these results in a separate report published earlier this year.[1] We found the prevalence of diabetes to be highest for ages 45 and up and that the prevalence of prediabetes generally increased with age among Medicaid enrollees.

Summary of evidence for DPP outcomes

Overall, the evidence for DPP effectiveness is strongest for modest weight loss, but few studies have measured the change in diabetes incidence or blood glucose. In general, many impacts observed in clinical trials have not been well validated by real-world experience. Below we provide a summary of the relevant literature, with health and financial outcomes discussed separately. Figure 2 compares some of the health outcomes described across different study types, populations, and time periods.

FIGURE 2: SELECTION OF DPP HEALTH OUTCOMES

POPULATION	DELIVERY MODE	STUDY TYPE	TIME PERIOD	PERCENT OF PARTICIPANTS WHO MET WEIGHT LOSS GOAL	AVERAGE PERCENT OF BODY WEIGHT LOST AT 12 MONTHS	CHANGE IN BLOOD GLUCOSE LEVEL AT 12 MONTHS	CITATION
Medicare	In-person, one-on-one coaching	Randomized controlled trial	1996–2001	50%	Not reported	5% reduction in fasting plasma glucose	[15] Knowler et al. 2002
Medicare; YMCA implementation	In-person; group sessions	Real-world data	2012–2016	35.5%	3.1%	Not reported	[18] Ely et al. 2017
Nationwide MDPP	In-person; telehealth	Real-world data	2018–2021	53%	5.1%	Not reported	[6] Hoerger et al. 2022
Oregon and Maryland Medicaid	In-person; online	Real-world data	2016–2018	Not reported	4.5%	Not reported	[19] Porterfield et al. 2018
Not specified; meta-analysis	In-person; online; telehealth	Meta-analysis; real-world data	2003–2011	Not reported	4%	Not reported	[9] Ali et al. 2012
Montana Medicaid	Telehealth	Real-world data	2008–2015	56%	12.1 lbs (% of baseline weight not reported)	Not reported	[20] Vadheim et al. 2017
Recruited CDC eligible population; location not reported	Online	Real-world data; quasi-experimental	Not reported	Not reported	4.8%	0.37% reduction in hbA1C	[22] Sepah et al. 2014
DPP-eligible patients at University of Nebraska Medical Center	Online	Randomized controlled trial	Dec. 2017–April 2019	43.4%	5.5%	0.08% reduction in HbA1C	[11] Katula et al. 2022

HEALTH OUTCOMES

Weight Loss

The DPP has been shown to be effective in achieving modest weight loss for a subset of participants (see Figure 2). In the clinical trial, 50% of participants achieved the weight loss goal of at least 7% by the end of the 24-week course and 38% of participants maintained this weight loss four years after the start of the program.[23]

Real-world implementations of this program have not been as effective, but participants still achieved modest weight loss. In a meta-analysis of real-world implementations of the DPP in the United States between 2003 and 2011, researchers found that mean weight loss was 4% of body weight at 12-month follow-up. The included studies did not measure diabetes incidence.[21] This review found no difference in weight loss between programs using health professionals, those using community educators, and those using digital or telephone assisted tools. Authors also found a positive relationship between the number of sessions offered and amount of weight loss. The findings on

number of sessions for most cost-effective intervention and type of educator are based on comparing studies; a single comparative effectiveness trial would be required to provide robust evidence.[21]

In an evaluation of the National DPPs between 2012 and 2016, median weight loss among participants was 3.1%, with 35.5% of participants meeting the goal of losing at least 5% of initial body weight and 50% of participants meeting the 150-minute weekly physical activity goal.[18] In the MDPP, 53% of participants achieved the 5% weight loss goal and 24.6% of participants achieved the 9% weight loss goal.[6] On average, participants in the program lost 5.1% of their body weight.[6] The Medicaid demonstration in Oregon and Maryland showed an average weight loss of 4.5% of baseline body weight.[19]

Similar weight loss was achieved in telehealth and online programs as in-person programs.[11,20,22] For example, Montana found no difference in participation or health outcomes for a rural Medicaid population participating in a telehealth program as compared to one delivered in person.[20]

Diabetes Incidence

Reducing weight and improving diet and exercise has been hypothesized to lead to a reduction in diabetes incidence, though this relationship has not yet been studied systematically for the program. In the DPP clinical trial, diabetes incidence was decreased by 58% for program participants, and 50% of participants met the weight loss goal of at least 7% of body weight by the end of the 24-week program, suggesting an association between the program and a reduction in diabetes incidence.[23] Incidence rate of diabetes is still being evaluated for the MDPP and will be reported once enough data is collected.[6] This will be a key result to understand the effectiveness of program.

Blood Glucose

Blood glucose levels are not typically reported throughout the program; however, the clinical trial measured blood glucose levels and found the lifestyle change program restored fasting blood glucose levels to a normal range relative to the placebo group.[23] A randomized clinical trial testing the effectiveness of a digital DPP reported a significant reduction in HbA1c at the end of the 12-month program relative to a control group that received in-person small-group education. Participants in the digital DPP group reduced HbA1c by an average of 0.23% and participants in the small-group education delivery reduced HbA1c by 0.16%.[11] Both groups that received DPP treatment had an increase in the percent of participants with HbA1c in the normal range.

Cardiovascular Outcomes

Though cardiovascular health is not a primary outcome measure of the DPP, there is some evidence that suggests participation in DPPs improves cardiovascular outcomes. A 10-year follow-up study on the clinical trial found significant reductions in blood pressure, LDL cholesterol, and triglycerides in both treated and control groups with no differences across groups; in addition, participants in the program had lower blood pressure and lipid medication use, suggesting their cholesterol and blood pressure were able to be managed through lifestyle changes rather than medication.[24]

A systematic literature review and meta-analysis of DPPs also found evidence of cardiovascular improvements. On average across studies, systolic blood pressure was reduced by 4.29 mm HG, diastolic blood pressure was reduced by 2.56 mm HG, high density lipids (HDL) increased by 0.85 mg/dL, and total cholesterol (TC) decreased by 5.34 mg/dL. Notably, most studies included in this review were pre-post studies without a control.[25]

The recent evaluation of the MDPP did not report changes in cardiovascular outcomes.[6] Further research is needed in this area to determine the effectiveness of current iterations of the DPP on cardiovascular conditions.

COST OUTCOMES

Short-Term Cost Savings

The National DPP pilot administered to Medicare beneficiaries through the YMCA between 2013 and 2015 reported total savings of $1,112 per participant per year, driven by a significant reduction of inpatient admissions and emergency department (ED) visits.[26] The most recent evaluation of the MDPP found the program had an insignificant impact on per member per month FFS expenditures.[6]

In a digital DPP program offered to privately insured adults through their US based employer, program participants had gross savings of $1,169 per participant per year relative to a control group, primarily driven by a reduction in inpatient admissions and shorter length of stay.[27] Average net savings for this population was found to be $598 per participant per year. Similar results, though not statistically significant, were found in an implementation of a digital DPP in Kaiser Permanente's Northwest population.[28]

To our knowledge, short-term effects of healthcare spend on Medicaid beneficiaries enrolled in DPP programs have not been quantified in the literature.

Cost Effectiveness

Long-term savings have not yet been directly measured for the DPP, but potential long-term cost effectiveness and savings from the program have been estimated using economic models. Cost effectiveness is often expressed as the incremental cost-effectiveness ratio (ICER) and/or cost per quality-adjusted life year (QALY). QALYs are a measure of the benefit of a medical treatment in terms of quality and length of life. ICERs are another measure of effectiveness that compares the cost and effectiveness of different treatment options. The ICER is calculated by taking the difference in cost between two possible interventions and dividing it by the difference in their effectiveness. This provides a cost per additional unit of effectiveness (like a QALY) of one intervention compared to the other. An ICER of $50,000 per QALY gained is a widely accepted cost-effectiveness threshold, meaning the intervention is relatively cost effective for the outcome; however, defining cost effectiveness based on ICERs will be dependent on context.[29]

In general, research finds that DPPs are relatively cost efficient and become more efficient on longer time horizons. It is important to emphasize that these results are modeled projections and not actual savings.

In a 10-year follow-up on the DPP clinical trial that used three years of DPP data to simulate the lifetime direct medical costs, including costs of the DPP or placebo-related interventions, those costs were estimated to be $51,974 per person for the DPP group and $51,339 per person for the placebo group. The intervention cost $635 more than the placebo group and resulted in a gain of 0.57 QALYs. The ICER was $1,110 per QALY. Costs of the program appeared to be offset by reductions in other medical spending.[30] In a study of the cost effectiveness of a community-based DPP for Medicaid beneficiaries in Minnesota, a model used pre- and post-intervention data as inputs to model QALYs and healthcare costs over a 40-year time horizon.[31] The model estimated that life expectancy increased by 0.028 QALYs and the estimated ICER was $14,011 per QALY. This analysis also included a scenario in which participants regained 50% of the weight loss during the program over a five-year period. In the weight regain scenario, life expectancy increased by 0.009 QALYs and the ICER was $91,830 per QALY.

Another study that modeled the cost effectiveness of implementing a DPP in eight state Medicaid populations projected that the initial program investment of $800 per person would be offset in 13 years and translate to $548 per person after 25 years.[32] From a Medicaid perspective, costs would be offset at 24 years, and the 25-year return on investment (ROI) would be $27 per person. The modeled cost effectiveness also improved with longer time horizons. On a five-year timeline, the intervention led to an increase of 0.003 QALYs and resulted in an ICER of $226,000/QALY. On a 10-year timeline, the intervention led to an increase of 0.10 QALYs and resulted in an ICER of $34,000/QALY. At 25 years the model estimated a per-person QALY gain of 0.043 and a savings of $548 per person, meaning that the intervention resulted in lower medical costs relative to the standard care pathway for a prediabetic population.

Potential challenges to effective DPP implementation

As the DPP has scaled and spread across the United States, several challenges related to the effectiveness and sustainability of the program have been identified. These challenges may be important to consider when implementing new iterations of the DPP.

LIMITED DURABILITY OF PROGRAM IMPACTS

Though behavioral or lifestyle therapies, including DPPs, have been shown to be effective in achieving modest weight loss for a subset of participants, few participants in these programs have been shown to maintain weight loss after ceasing these programs. In a study measuring health outcomes 10 years post baseline of the MDPP clinical trial, participants gradually regained weight from an average of a 15.4 pounds weight loss 12 months post baseline to 4.4 pounds 10 years post baseline.[15] A systematic review of 21 behavioral and lifestyle therapies similar to the DPP found that weight regain by 12 months post enrollment occurred in half of the interventions.[33]

As our understanding of the relationship between obesity and health risks continues to evolve along with the development of new clinical interventions, we should reevaluate elements of the DPP to ensure we are using the most recent information. In a review of the DPP barriers and successes, authors recommend strategies to emphasize behavioral changes that help manage blood glucose levels rather than focusing on short-term weight loss.[34] Programs may consider measuring blood glucose levels at specific time points throughout the program. Montana's DPP requires a blood test at baseline, six months, and 12 months.[35] At the time of this report, no results have been published on the impact of blood test requirements on participant enrollment or retention, and the changes in blood glucose have not been reported.

It may also be clinically appropriate to pair programs with weight management medication,[15] although there are limitations and considerations related to anti-obesity drugs as well. For example, medications are typically required to be taken long-term to maintain weight and can be expensive.

PROGRAM COSTS

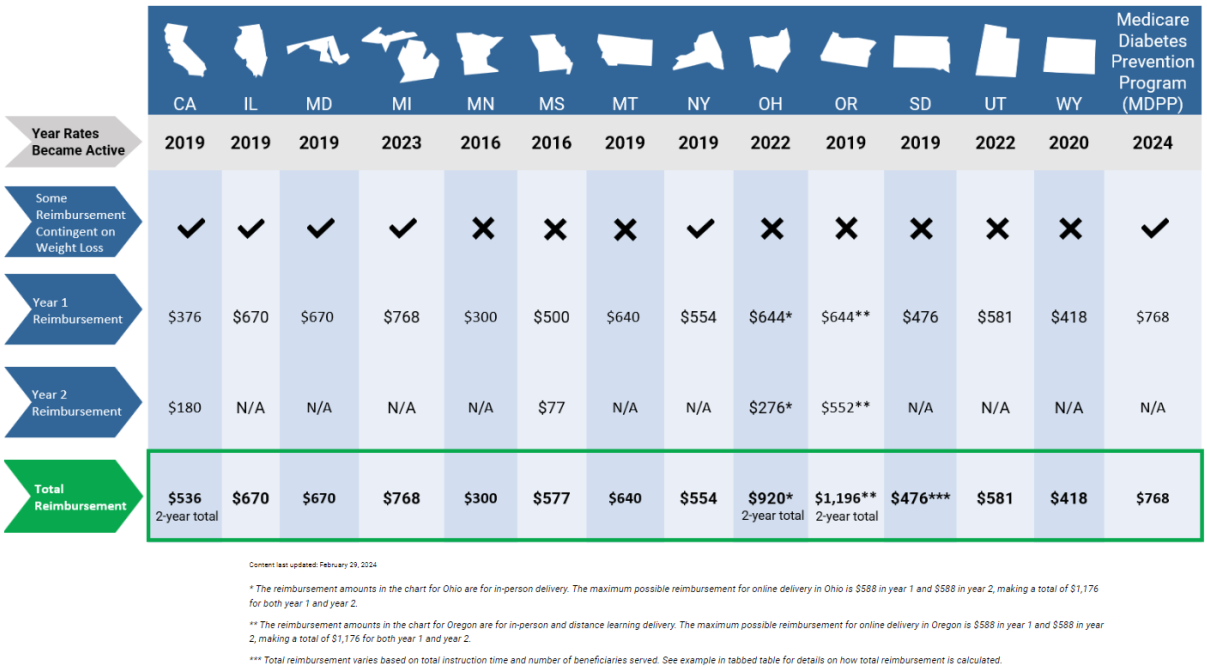
Though there is potential for net savings for health plans, DPP providers have cited challenges with financing the programs due to reimbursement rates relative to the cost of program delivery.

There are not many reported costs of program delivery for the first year of in-person MDPP programs, but in two studies, costs were $553 and $620 per enrolled participant.[36,37] In 2018, maximum reimbursement was $125 per participant if they did not meet the 5% weight loss goal and $810 per participant if they did meet the 5% weight loss goal.[38] The maximum rate assumes that a participant attends every session and meets the weight loss targets required to receive performance-based payments. In actuality, average reimbursement is typically lower than the maximum. For example, if we assume 30% of participants [6,18,19] meet the goal, this would result in an average reimbursement rate of $331 per participant. In 2024, CMS reimbursed providers of in-person MDPPs up to $768 per participant.[12]

In the Medicaid demonstration, providers reported that payments to DPP providers were lower than the cost to administer to program. The average payment per participant to a program provider administering an in-person DPP in the Medicaid pilot was $595, but the average cost for the program provider to administer the program was $1,529 per participant.[19] Similarly, the average payment per participant for an online program was $350 but the average cost to the provider was $556.[39] Figure 3 describes Medicaid reimbursement rates across states with active programs.

Providers shared that the performance-based reimbursement structure originally used in the Medicare program was a deterrent to their participation in the program, citing not only low reimbursement but the complex coding structure and difficulty of achieving the 5% weight loss benchmark required for performance-based payment.[12,34,40]

FIGURE 3: STATE MEDICAID REIMBURSEMENT



	CA	IL	MD	MI	MN	MS	MT	NY	OH	OR	SD	UT	WY	Medicare Diabetes Prevention Program (MDPP)
Year Rates Became Active	2019	2019	2019	2023	2016	2016	2019	2019	2022	2019	2019	2022	2020	2024
Some Reimbursement Contingent on Weight Loss	✓	✓	✓	✓	✗	✗	✗	✓	✗	✗	✗	✗	✗	✓
Year 1 Reimbursement	$376	$670	$670	$768	$300	$500	$640	$554	$644*	$644**	$476	$581	$418	$768
Year 2 Reimbursement	$180	N/A	N/A	N/A	N/A	$77	N/A	N/A	$276*	$552**	N/A	N/A	N/A	N/A
Total Reimbursement	**$536** 2-year total	**$670**	**$670**	**$768**	**$300**	**$577**	**$640**	**$554**	**$920*** 2-year total	**$1,196**** 2-year total	**$476*****	**$581**	**$418**	**$768**

Content last updated: February 29, 2024

** The reimbursement amounts in the chart for Ohio are for in-person delivery. The maximum possible reimbursement for online delivery in Ohio is $588 in year 1 and $588 in year 2, making a total of $1,176 for both year 1 and year 2.*

*** The reimbursement amounts in the chart for Oregon are for in-person and distance learning delivery. The maximum possible reimbursement for online delivery in Oregon is $588 in year 1 and $588 in year 2, making a total of $1,176 for both year 1 and year 2.*

**** Total reimbursement varies based on total instruction time and number of beneficiaries served. See example in tabbed table for details on how total reimbursement is calculated.*

Source: https://coveragetoolkit.org/medicaid-mco-reimbursement/

LOW ENROLLMENT

Low enrollment rates have been cited as an issue for real-world implementations of DPPs across all markets. For example, in a study of a DPP adoption in an employer population, 9.5% of eligible employees and dependents with commercial insurance through the University of Michigan enrolled.[41] Participation in the MDPP has also been far lower than expected since its rollout in 2018. In the first three years of the program, 3,600 people enrolled across the United States, but the program was projected to enroll 110,000 in the first 10 years.[40] In another study of a DPP-like weight management program implemented across five urban community health centers, 12,487 patients were identified through screening as being overweight or obese, 40% received a provider referral to the program, 15.6% had at least one contact with the program, and 2.1% had more than 10 contacts.[42]

Digital platforms and telehealth programs may increase accessibility by reducing transportation barriers.[11] In a study of the National DPP between 2012 and 2019, enrollment increased by over 100% when telehealth and online programs were made available, suggesting that offering multiple modes of delivery is important for program reach.[43] Studies of telehealth and online programs found no difference in health outcomes or the average number of days attended relative to in-person programs.[11,17,20,22]

Provider Referrals

Low provider referral rates are one possible explanation for low enrollment. In a study of a nationally representative sample of the U.S. adult population from the National Health Interview Survey between 2016 and 2017, only 5% of adults with an elevated BMI and prediabetes diagnosis received a referral to a DPP, compared to 60% that received general advice about diabetes risk reduction.[44] Of those who received a referral, 40% reported participating in a program, suggesting other drivers for low enrollment beyond provider referral.[44] Low provider awareness may be contributing to low referral rates. In a 2016 survey of 1,200 primary care providers, 38% of respondents were aware of the DPP and 23% referred patients to the program.[45]

Provider Supply

Low provider availability may be another possible driver of low enrollment.[34] As previously discussed, low reimbursement rates and provider awareness are major factors related to provider availability. As of 2021, there were 1,059 MDPP provider locations across the United States. Proximity to a provider was positively associated with

participation in the MDPP. The majority of MDPP participants (97%) lived within 25 miles of an MDPP supplier, but 39% of all Medicare beneficiaries lived more than 25 miles from an MDPP supplier.[6] Nationally, DPP provider availability is generally much lower in rural counties than urban counties. A 2019 study of National DPP provider sites found that 14.6% of rural counties had a least one National DPP site, compared to 48.4% of urban counties.[46]

Texas currently has 30 MDPP suppliers, primarily located in the greater Houston area.[47] There is a wider distribution of providers that partner with Texas DSHS to offer a DPP to the public, including under- and uninsured populations.[48]

State and federally funded programs have issues with long-term funding and may close at the end of a grant cycle (three to five years). Changes in funding cycle to cycle can also influence provider retention.

Patient Awareness

Increasing patient awareness of DPPs and diabetes risk factors may also improve enrollment. The 2016 National Diabetes Education Program (NDEP) National Diabetes Survey (NNDS) found that 45% of people at risk of diabetes were aware of their personal risk, and a diagnosis of prediabetes significantly increased personal awareness to 65%.[49] A diagnosis of prediabetes also increased the likelihood of taking action to reduce the risk of diabetes from 52% to 71%.

Strategies to improve awareness include mass marketing campaigns, improving provider awareness, and implementing systematic screening and referral.[50] During the Medicaid demonstrations in Maryland and Oregon, MCOs and coordinated care organizations (CCOs) found direct outreach to eligible beneficiaries via phone or email to be an effective strategy for improving enrollment.[39]

LOW RETENTION/ATTRITION

Participants who attend more DPP sessions have been found to be more likely to achieve weight loss and physical activity goals, suggesting that improving retention is important for the effectiveness of the program and improving population health outcomes. For example, the evaluation of the 2012–2016 National DPP found that each additional session attended resulted in an additional 0.31% of body weight lost; however, only half the participants attended the program for at least six months and only 10% of participants completed the full 22-session program.[18] Similar results were reported in a meta-analysis where each session attended was associated with 0.26% more weight loss for the first 24 weeks of the program.[16] In the Medicaid demonstration in Maryland and Oregon, 25.6% of participants attended four or fewer classes.[39]

Financial incentives for lifestyle change programs have been shown to be associated with greater improvement in health outcomes.[51] In a 2012 study of financial incentives within Medicaid DPP programs in Montana, Minnesota, and New York, financial incentives for participants were found to be associated with higher retention rates in Medicaid populations.[52,53] Participants were paid between $7.50 and $25 per class attended and/or for meeting weight loss goals. The odds of completing nine or more classes were 160% higher for participants paid to attend classes compared to a control group, but the odds were only 50% higher for participants incentivized to meet weight loss goals compared to the control.[52]

Offering benefits alongside the DPP that address nonmedical barriers, including free or subsidized gym membership, groceries or food boxes, childcare, and transportation to attend classes may improve enrollment and retention of DPP participants, especially among Medicaid beneficiaries. For example, providing transportation has been shown to reduce no-show rates for Medicaid patients in a study where patients were provided with rideshare transportation to appointments.[54] The odds of attending an appointment increased 2.57 times after transportation intervention. In a survey of DPP-eligible patients at a safety-net healthcare system, 61.3% of respondents cited challenges with schedules and 12.9% cited transportation concerns as being anticipated barriers to their participation in the DPP.[55] As previously discussed, digital platforms and telehealth programs may increase accessibility by reducing transportation barriers.[11, 20] If implementing an online program, it is also important to think about eligible members' access to broadband internet.

Other retention improvement strategies include tailoring programming to the target population in a certain service area, such as providing culturally specific programming and translation services, offering a range of class times throughout the week, and engaging participants via phone calls or texts throughout the program to foster a sense of support and accountability.[19]

Methodology

We searched peer-reviewed literature and state and federal government websites for publications and information related to the National DPP and other DPPs beyond the official CDC program including:

- States with similar populations, priorities, and challenges as Texas
- Food Is Medicine programs and other nonmedical drivers of health interventions

We excluded the following:

- Diabetes management programs
- Programs implemented at scale pre-Affordable Care Act

Caveats and limitations

This report was commissioned by the Episcopal Health Foundation and is intended to describe existing evidence on DPPs offered by state Medicaid programs and Medicare to demonstrate the potential opportunity for a Medicaid DPP in Texas. It may not be appropriate and should not be used for other purposes. This report does not represent conclusive recommendations regarding diabetes prevention interventions or program strategies. Milliman does not intend to benefit or create a legal duty to any other recipient of this work.

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CONTACT

Bridget Darby
bridget.darby@milliman.com

Stoddard Davenport
stoddard.davenport@milliman.com

Milliman