Avalere

To: Third Way

From: Avalere Health

Date: December 16, 2014

Re: Estimated Federal Impact or a Diabetes Prevention Program for Medicare

Summary

Third Way asked Avalere Health to estimate the cost or savings on the Federal budget of a diabetes prevention program for Medicare beneficiaries. This proposal would create a new Medicare benefit covering eligible diabetes prevention programs for Medicare beneficiaries diagnosed with prediabetes. These diabetes prevention programs would meet the standards under the National Diabetes Prevention Program established by the Centers for Disease Control and Prevention (CDC), and would offer group-based lifestyle intervention sessions for eligible Medicare beneficiaries. Physicians, health plans and providers would be encouraged to better identify individuals with prediabetes by publicly reporting of screening rates for prediabetes and requiring medical homes to conduct routine prediabetes screenings. This public reporting would also include a measure of the rate at which individuals who have prediabetes avoid developing diabetes.

We estimate this proposal would decrease federal spending by $5.6 billion over the 2014-2025 federal budget window. This amount reflects a combination of an estimated $10.5 billion in new spending on the diabetes prevention program and screenings initiatives offset by an estimated $16.1 billion in savings from fewer Medicare beneficiaries diagnosed with diabetes over the next 10 years.

Estimated Change in Federal Spending due to a Diabetes Prevention Program for Medicare

$ in billions, by fiscal year

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	**2015-2024**
Costs due to prevention program	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.6	1.6	**10.1**
Costs of new diabetes screening	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	**0.4**
Savings due to fewer Medicare beneficiaries with diabetes	0.0	-0.1	-0.2	-0.5	-0.8	-1.3	-1.9	-2.7	-3.6	-4.8	**-16.1**
Net change in spending	**0.2**	**0.3**	**0.4**	**0.3**	**0.2**	**-0.1**	**-0.5**	**-1.2**	**-2.0**	**-3.2**	**-5.6**

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Background

The Centers for Disease Control and Prevention (CDC) estimates nearly 11 million, or 27 percent, of Americans age 65 or older have diabetes, and an additional 400,000 individuals in this age group are diagnosed with diabetes each year.[1] A recent study published by the American Diabetes Association estimated the per person healthcare costs of individuals age 65 and above with diabetes were $11,825 in 2012, with much of this cost paid by the Medicare program.[2]

The CDC also estimates that 50 percent of individuals age 65 or older have prediabetes, which is defined as a person with blood glucose or A1c levels that are higher than normal but not high enough to be classified as diabetes.[3] The incidence rate of diabetes for individuals in this age category is high, with an estimated 30 percent transitioning to diabetes within four years.[4] Studies have demonstrated that intervention programs for this population can reduce the incidence of diabetes by nearly 60 percent over 10 years.[5]

Between 1996 and 1999, the Diabetes Prevention Program Research Group conducted a clinical trial to test the effectiveness of lifestyle intervention or treatment with metformin at reducing the risk of type 2 diabetes. The results of this trial demonstrated that an intensive lifestyle intervention reduced the incidence by 58 percent over an average of three years.[6] A follow-up study of the same participants over 10 years demonstrated ongoing lower incidence of diabetes for individuals who received lifestyle intervention therapy.[7]

To address the potential for reducing the incidence of diabetes, the CDC created the National Diabetes Prevention Program (National DPP). The National DPP uses the Diabetes Prevention Recognition Program Standards and Operating Procedures to set the requirements for a lifestyle program to prevent type 2 diabetes. These standards include participant eligibility, location and staffing requirements, curriculum content and topics, and other requirements for full recognition. Of particular note, any sanctioned program should contain 16 core sessions provided to eligible individuals with prediabetes, as well as eight follow-up sessions to address ongoing maintenance.[8]

This proposal would create a new benefit for Medicare beneficiaries with prediabetes. The proposal would require the Secretary of Health and Human Services (HHS) to develop criteria for a diabetes prevention program that are in accordance with the standards already developed by the National DPP. Payment for the sessions offered by certified diabetes prevention programs would be made from the Supplemental Medical Trust Fund (i.e., Part B), and the rate

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[1] Centers for Disease Control and Prevention. "National Diabetes Fact Sheet, 2011" Available at http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf.
[2] American Diabetes Association. "Economic Costs of Diabetes in U.S. in 2012." *Diabetes Care*, March 6, 2013. Available at http://care.diabetesjournals.org/content/early/2013/03/05/dc12-2625.full.pdf+html.
[3] Centers for Disease Control and Prevention. "National Diabetes Fact Sheet, 2011"
[4] Diabetes Prevention Program Research Group. "Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin." *New England Journal of Medicine*. February 7, 2002.
[5] Diabetes Prevention Program Research Group. "10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study." *Lancet*. October 29, 2009.
[6] Diabetes Prevention Program Research Group. "Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin." *New England Journal of Medicine*. February 7, 2002.
[7] Diabetes Prevention Program Research Group. "10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study." *Lancet*. October 29, 2009.
[8] Centers for Disease Control and Prevention. "Diabetes Prevention Recognition Program: Standards and Operating Procedures". September 2, 2011. Available at http://www.cdc.gov/diabetes/prevention/pdf/dprp_standards_09-02-2011.pdf.

would equal to the lesser of the actual charge for items and services provided or the amount determined under the fee schedule that applies to such items. Beneficiaries would not be required to pay a copay for the sessions, and the spending would not be subject to the annual Part B deductible. The program provider would be required to furnish the necessary items and services in a community setting, and would be allowed to use a delivery partner.

In addition, in order to encourage greater awareness of prediabetes and use of the prevention program, this proposal would require health plans and providers to publicly report prediabetes screening rates as well as include testing for prediabetes as a component of qualification as a patient-centered medical home (PCMH).

Public reporting programs are a strategy to improve the quality of healthcare by making facility, physician and health plan performance on quality measures publicly available. In theory, public reporting empowers consumers to make informed decisions about the providers they visit. The channeling of patients towards higher quality providers then incentivizes providers to improve care quality as a means of attracting patients and increasing market share. In a systematic review of the literature, authors found that, "in general, the effect of public reporting on patients was mixed. Six studies reported a positive effect on patients, nine reported a mixed effect, that is, some positive effects on patients and some negative or null, eight reported a null effect, and one reported negative effects."[9]

The patient-centered medical home (PCMH) is a primary care model that seeks to improve the patient experience and quality of care while lowering costs. Though different versions of the model exist, the defining features of a PCMH are coordinated care and enhanced communication. CMS is currently evaluating costs and outcomes related to the PCMH through two programs, the Federally Qualified Health Clinic (FQHC) Advanced Primary Care Practice (APC) Demonstration and the Comprehensive Primary Care (CPC) Initiative. The former project was announced in June 2011. It includes 469 participant sites across 46 states and the District of Columbia and provides care for nearly 195,000 Medicare beneficiaries. [10] The latter project, also announced in 2011, includes 497 participant sites across eight states and provides care for nearly 314,650 Medicare beneficiaries. [11]

Data Sources

We used the following data sources to develop our estimate:

- Centers for Disease Control 2011 National Diabetes Fact Sheet.
- Busetto, L, et. al. "Predictors of drop-out in overweight and obese outpatients". *International Journal of Obesity*. 2005; (29.1): 122-128.
- Diabetes Prevention Program Research Group. "Reduction in the Incidence of Type 2 Diabetes with Lifestyle Intervention or Metformin". *New England Journal of Medicine*. 2002; 346(6): 393-403.
- Diabetes Prevention Program Research Group "10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study". *The Lancet*. 2009; 374: 1677-1686.

[9] Lindenauer, Peter K., et al. "Public reporting and pay for performance in hospital quality improvement." New England Journal of Medicine 356.5 (2007): 486-496.
[10] http://innovation.cms.gov/initiatives/fqhcs/
[11] http://innovation.cms.gov/initiatives/comprehensive-primary-care-initiative/

- Ash, S. et. al. "A randomised control trial comparing lifestyle groups, individual counseling and written information in the management of weight and health outcomes over 12 months". *International Journal of Obesity*. 2006; 30: 1557-1564.
- Albright, Ann. "Rolling Out the National Diabetes Prevention Program". Centers for Disease Control and Prevention. Presentation available online at http://www.businessgrouphealth.org/pub/f312a61d-2354-d714-516a-82962901a993.
- Centers for Medicare & Medicaid Services. "Announcement of Calendar Year (CY) 2014 Medicare Advantage Capitation Rates and Medicare Advantage and Part D Payment Policies and Final Call Letter". April 1, 2013. Available at http://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Announcement2014.pdf.
- Nelson, L. "Lessons from Medicare's Demonstration Projects on Disease Management and Care Coordination". Working Paper 2012-01, Congressional Budget Office. Available at http://www.cbo.gov/publication/42924.
- Congressional Budget Office. "May 2013 Medicare Baseline". Available at http://www.cbo.gov/publication/44205.
- Vojta, D. et. al. "Effective Interventions For Stemming The Growing Crisis Of Diabetes And Prediabetes: A National Payer's Perspective." *Health Affairs.* 2012; 31(1): 20-26.
- Perreault, L. et. al. "Regression from Pre-diabetes to Normal Glucose Regulation is Associated with Long-term Reduction in Diabetes Risk: Results from the Diabetes Prevention Program Outcomes Study". *The Lancet.* 2012; 379(9833): 2243-2251.
- Lindenauer, Peter K., et al. "Public reporting and pay for performance in hospital quality improvement." New England Journal of Medicine 356.5 (2007): 486-496.

Assumptions and Methodology

Enrollment and Participation in Diabetes Prevention Programs

We first estimated that approximately 20 million Medicare beneficiaries in the fee-for-service (FFS) program would be potentially eligible for a diabetes prevention program, based on the CDC's estimate that 50 percent of individuals over the age of 65 have prediabetes. However, two factors will significantly reduce the number of Medicare beneficiaries who actually enroll in a program. One, the rate of undiagnosed prediabetes is estimated to be as high as 90 percent, although appears to have declined in recent years[12]. This suggests that many Medicare enrollees will be unaware that they are eligible to enroll in a diabetes prevention program. The second limiting factor will be the availability of a certified diabetes prevention program, due to the likely requirements for program approval. Based on these two factors and in the absence of any reporting requirements, we estimate that three percent of the eligible Medicare population with prediabetes will enroll in a diabetes prevention program in 2015.

However, we assume that the reporting requirements for physicians in the Physician Quality Reporting System (PQRS) as well as medical homes will lead to a slight rise in the number of undiagnosed Medicare beneficiaries with prediabetes who receive an annual diabetes screen. Medicare currently covers one diabetes screen per year for individuals who have never been diagnosed with prediabetes. We assume approximately 50% of the physicians enrolled in PQRS will routinely screen their patients for diabetes, increasing awareness of prediabetes by 20-35%

[12] Centers for Disease Control and Prevention. "Awareness of Prediabetes – United States, 2005-2010". *Morbidity and Mortality Weekly Report*. March 22, 2013: 62(11); 209-212.

over time. The additional awareness will significantly raise participation in the prevention program. Combined with additional capacity as more diabetes prevention programs open to meet the demand, we believe participation in certified prediabetes programs will reach 15% of the Medicare population with prediabetes.

We estimate that 25 percent of the enrollment group in each year will drop out before completing the program. We based this rate on information provided to Avalere from the YMCA regarding its experience with both its overall diabetes prevention programs, which has seen an approximate 30 percent dropout rate, and its CMMI demonstration, which has seen an approximate 10 percent dropout rate. We believe the total Medicare experience will be closer to the overall program rates, which are also roughly in-line with dropout rates seen in other obesity-focused lifestyle intervention programs. We estimate that individuals who drop out of the program will receive an average of 6 sessions, or slightly less than half of the full core sessions offered by a certified diabetes prevention program.

Of the group that does not dropout of the program, we estimate that the average enrollee will receive 16 sessions during the year out of the 24 maximum sessions (16 core, 8 maintenance). Again, this is roughly in-line with the results witnessed by the YMCA in its overall diabetes prevention program.

Finally, we estimate that approximately one-third of the participants will return for one additional year of prediabetes sessions. While the National DPP is designed as a single year program, some individuals do return for a second year of the program. Therefore, we estimate a portion of the enrollees will continue to participate in the program due to the perceived value they are receiving from the sessions.

We adjust our ongoing enrollment estimates by two factors: mortality and incidence of diabetes. The mortality rates are based on the estimated survival curve for individuals between the age of 65 and 80, while the incidence rates are based on the modeling assumptions described in the next section.

Table 1: Estimated Enrollment in New Diabetes Prevention Programs
in thousands

Enrollment Group	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Yearly program enrollees	582	1,132	1,417	1,867	2,439	3,036	3,827	4,247	4,348	4,453
First-year drop-outs (average 5 sessions)	209	270	332	453	580	712	910	931	953	977
First-year completers (average 16 sessions)	582	752	926	1,263	1,615	1,982	2,533	2,593	2,655	2,719
Subsequent year participants (average 8 sessions)	0	380	491	604	824	1,054	1,294	1,654	1,693	1,733

Medicare Reimbursement for Diabetes Prevention Program Sessions

The proposed legislation requires Medicare to reimburse for the cost of a session. Studies suggest the total cost of a certified 16-session diabetes prevention program ranges from $275 to

$550 depending on a variety of factors. A more recent application of a diabetes prevention program relied on online tools, and cost an average of $12 per session.[13]

We have assumed Medicare will pay an average of $15 per person in a group-based diabetes prevention program, and will only pay for the actual number of sessions that an individual attends. This rate is lower than the amount paid by Medicare for similar intervention programs such as self-care management training or kidney disease education. However, given the potential for utilizing both in-person and online tools for the program, we have assumed Medicare will pay slightly less to encourage efficient application of the program. Based on the participation assumptions described above, this would result in an average payment of $240 in 2015 for a participant who does not drop out of the program versus $120 for a person who does drop out.

We also assume that the reimbursement for diabetes prevention program sessions will be based on the Medicare physician fee schedule, and therefore subject to annual updates based on the Sustainable Growth Rate (SGR).

Effect of Diabetes Prevention Program on Diabetes Incidence

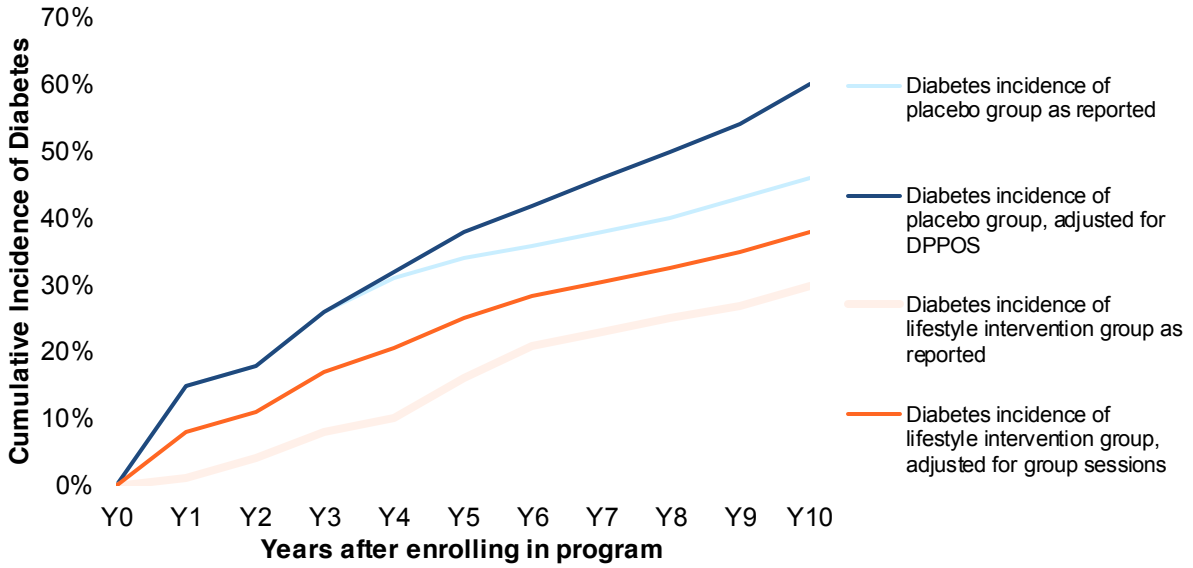
To determine the effect of the new diabetes prevention programs on diabetes incidence in the Medicare population, we first started with the evidence from the Diabetes Prevention Program Outcomes Study (DPPOS). This study showed a cumulative reduction of nearly 60 percent for individuals over the age of 60. However, due to the design of the DPPOS, we needed to make two modifications to the reported incidence rates.

- **Control group adjustment**: Under the DPPOS, individuals who were enrolled in the placebo arm of the study received lifestyle interventions starting in year three. This intervention was necessary due to the original study design, but likely had the effect of reducing the incidence of diabetes relative to an entirely unmanaged population of people with prediabetes. Therefore, we increased the reported incidence and prevalence for the placebo group to reflect the expected rate of diabetes among the eligible population absent participation in a new diabetes prevention program.
- **Intervention group adjustment**: The lifestyle intervention offered in the original DPPOS was an intensive one-on-one session with significant amounts of follow-up advice. However, the intervention in the proposed legislation would be a group session. Since the intervention will likely not be as intensive, and since study participants often demonstrate a higher level of involvement than in 'real-world' programs, we assumed the effect of the diabetes prevention programs launched due to the proposed legislation would only be 50 percent as effective as the results from the DPPOS.

After these two adjustments, we estimate the proposed legislation will reduce the cumulative incidence rate of diabetes by 37 percent over 10 years.

[13] "Omada takes proven prediabetes intervention online." Mobile Health News, December 2012. Available online at http://mobihealthnews.com/19489/omada-takes-proven-prediabetes-intervention-online/.

Figure 1: Reported and Adjusted Cumulative Incidence of Diabetes



Source: DPPOS and Avalere estimates

Table 2: Estimated Incidence of Diabetes With and Without New Diabetes Prevention Programs
in thousands; reflects estimated incidence of individuals who are expected to enroll in program

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Incidence of diabetes without program	0	107	281	587	1,037	1,643	2,432	3,392	4,489	5,716
Incidence of diabetes with program	0	57	198	400	707	1,105	1,631	2,263	2,984	3,790
Cumulative change in incidence due to program participation	**0**	**-50**	**-83**	**-186**	**-332**	**-538**	**-801**	**-1,129**	**-1,505**	**-1,925**

Medicare Savings from Reduced Incidence of Diabetes and Prediabetes

To estimate the marginal cost of diabetes on the Medicare program, we relied on the risk scores developed as part of the payment mechanism for Medicare Advantage plans. Specifically, we used the 2014 rate for diabetes without complications and the rate for diabetes with complications that the Centers for Medicare & Medicaid Services (CMS) calculated using the Hierarchical Conditions Category (HCC) model. The HCC model risk scores reflect the estimated Medicare spending associated with a specific condition.

Of the enrollees who would have developed diabetes without the intervention of the diabetes prevention program, we assumed 90 percent would have developed diabetes without complications, while only 10 percent would have developed diabetes with complications. This mix of diabetes without complications is slightly higher than the overall Medicare population mix, as we estimate that individuals who choose to participate in a new diabetes prevention program will be more engaged in their own health, which suggests that they would have been more focused on controlling the effects of diabetes once diagnosed.

We applied the relevant risk scores to the estimated per-person Medicare spending from the most recent Congressional Budget Office (CBO) baseline to determine the amount per person that the program will save due to avoided incidence of diabetes. Since the HCC score reflects

the estimated marginal cost of a specific condition, we assumed that the 2015 per-person Medicare A&B cost of diabetes without complications will be $1,285, while the per-person Medicare A&B cost of diabetes with complications will be $4,008. Meanwhile, the average 2015 Part D cost for diabetes without complications will be $495, while the average Part D cost for diabetes with complications will be $742. We adjusted the Part D estimate to account for the 65 percent of Medicare FFS enrollees who also have Part D coverage.

This process resulted in an overall estimated Medicare spending for diabetes care of $1,877 per person in 2015 for the type of person that we project will enroll in a new diabetes prevention program. We increased this spending estimate annually using the growth estimates from the CBO. We estimate that Medicare will save this amount for individuals who avoid developing diabetes due to participation in a new diabetes prevention program.

Table 3: Calculating the Estimated Savings from Reduced Incidence of Diabetes

	Value	Dollars
2015 Average A/B Spending per Person (CBO)		$10,891
2015 Average D Spending per Person (CBO)		$2,689
Risk Scores		
HCC19--Diabetes with complications	0.368	$4,008
HCC20--Diabetes without complications	0.118	$1,285
RxHCC14--Diabetes with complications	0.276	$742
RxHCC14--Diabetes without complications	0.184	$495
Expected enrollment		
Diabetes with complications	10%	
Diabetes without complications	90%	
2015 Estimated A/B Spending on Diabetes per Person		**$1,557**
2015 Estimated D Spending on Diabetes per Person		**$520**
2015 Total Estimated Spending on Diabetes per Person		**$1,877**

Source: CMS, CBO and Avalere estimates

To determine the potential savings from reducing the number of people with prediabetes, we used information from an analysis of all-payer spending on diabetes and prediabetes. This analysis suggested that the annual spending due to prediabetes for individuals with Medicare coverage is approximately $740 per person per year. However, it is unclear if this entire amount is avoidable, so we assumed only 50 percent of the spending would actually be reduced if individuals cease to have prediabetes due to participation in a new diabetes prevention program. In addition, evidence suggests a modest number of individuals will cease to have prediabetes due to participation in a diabetes prevention program, so we assumed that only 15 percent of participants would see any reduction in Medicare spending.