

State of Nevada, Division of Health Care Financing and Policy  
**Medicaid Incentives for Prevention of Chronic Disease (MIPCD) Application Narrative**

**Organization and Administration**

This application in response to the Patient Protection and Affordable Care Act Section 4108 Medicaid Incentives for Prevention of Chronic Diseases (MIPCD) solicitation (Funding Opportunity Number: CMS-1B1-11-001) is submitted by the single state Medicaid agency, the State of Nevada Department of Health and Human Services (DHHS). The Division of Health Care Financing and Policy (DHCFP) will be responsible for the day to day management of the Nevada MIPCD Program. DHCFP is responsible for administering two major federal health coverage programs, Medicaid and Nevada Check Up (the state's Children's Health Insurance Program).

DHCFP will oversee the Nevada MIPCD Program under the overall direction of the DHCFP Administrator (i.e., the state's Medicaid Director). DHCFP will hire an MIPCD Program Coordinator that will be administratively housed in the Program Services section of DHCFP. The Program Services section is overseen by the DHCFP Deputy Administrator who also oversees DHCFP long term care services, District Offices Managed Care, and Nevada Check Up within DHCFP. More information on the organization structure within DHCFP for the management of this grant is provided in the Proposed Budget & Staffing Plan.

The Program Coordinator will be responsible for coordinating the work of Program Partners described below. The Nevada MIPCD Program will encompass two distinct program components. Nevada Medicaid administers both fee-for-service and managed care programs. The first program component will target beneficiaries enrolled with Nevada's Medicaid Managed Care Organizations (MCOs). The second program component will target beneficiaries through the fee-for-service (FFS) system.

The first program component nests incentives in the diabetes disease management programs conducted by Nevada's Medicaid MCOs. Two MCOs serve beneficiaries covered under

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Medicaid and Nevada Check Up. These two essential MCO Program Partners are **Amerigroup Nevada, Inc. (Amerigroup)**, and **Health Plan of Nevada (HPN)**, which operate in both Clark and Washoe counties.

The second and third program components will target specific subpopulations of FFS beneficiaries. These targeted FFS subpopulations include adults with diabetes, adults at-risk of developing type 2 diabetes, and children at-risk of heart disease. Support and facilitation for critical behavioral change and risk-reduction will be provided through evidence-based programs offered as supplemental services not available under the Medicaid State Plan. Program Partners participating in the Nevada MIPCD Program to carry out programs to provide incentives to Medicaid FFS beneficiaries include the following entities.

**Lied Clinic Outpatient Facility at University Medical Center (UMC)**, Southern Nevada's major acute care, not-for-profit teaching hospital, will provide diabetes self management education to adults Medicaid FFS beneficiaries

**The Southern Nevada Health District**, one of the largest local public health organizations in the United States, will provide diabetes self management education to adults Medicaid FFS beneficiaries;

**YMCA of Southern Nevada (YMCA)** will provide a nationally recognized program based on research funded by the National Institutes of Health and the CDC to adults at risk of developing type 2 diabetes; and

**Children's Heart Center Nevada**, Nevada's largest pediatric cardiology practice, will provide a comprehensive program to overweight children at risk of heart disease.

The tasks to be conducted by each Program Partner are more fully described throughout this application narrative with respect to program outreach, participant recruitment, data collection

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and evaluation. Letters of support from these essential Program Partners are provided in Appendix A.

A growing body of practical experience regarding consumer incentive strategies has emerged from the commercial healthcare sector. As the Nevada MIPCD Program tests the impact of incentives to Medicaid beneficiaries, DHCFP intends to employ a point-based incentive technology platform that has been successfully used for employer-based incentive programs in order to leverage the experience achieved in the commercial sector. DHCFP proposes to contract with ChipRewards as a third-party incentives administrator to set-up and maintain this technology platform and distribute incentives to participants.

ChipRewards was created by the founders of ValueCentric Marketing Group, Inc., a company focused on licensing its proprietary loyalty and rewards software, ValueSYS™, to marquee clients with large scale, complex incentive programs. ChipRewards has exclusively licensed and customized ValueSYS™ to provide a web-enabled, scalable technology platform capable of awarding incentives based on behavior-specific events to health insurers and third-party administrators. The software application at the core of the ChipRewards solution currently supports over 50 million loyalty accounts for a variety of marquee clients in the financial services, retail, and gas and convenience industries.

The state-level independent evaluation for the Nevada MIPCD Program will be conducted by the University of Nevada, Reno (UNR), one of the top 120 universities in America for funded research, according to the Carnegie Foundation. With more than \$80 million in research expenditures, a figure that has almost doubled over the past 10 years, UNR is the leading research enterprise in Nevada's higher education system. UNR has more than 60 research centers and facilities, and dozens of state-of-the-art laboratories. UNR is also home to the University of

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Nevada School of Medicine and the College of Business. Principal investigators will include a group of three University professors (2 economists and 1 information systems professor). This group is familiar with Medicaid eligibility and claims data, having recently completed analyses of impact of Medicaid managed care for DHCFFP. This group is currently working on statistical analysis to support the DME fraud investigation process. The economists have also published analysis of the impact of prenatal care on infant health, and the impact of a diabetes management program using health system data.

DHCFFP will partner with the Nevada State Health Division (Health Division) within DHHS in promoting the Nevada MIPCD Program. This collaboration will leverage the Health Division's core public health mission to inform, educate, and empower people about health issues and mobilize community partnerships and action to identify and solve health problems. Together DHCFFP and the Health Division will drive DHHS' overall strategies to invest in wellness programs to reduce chronic disease, including branded statewide programs as reflected in the Nevada Strategic Health Care Plan.

DHCFFP has established a Core Work Group to plan for the Nevada MIPCD Program consisting of DHCFFP, the Health Division, all Program Partners, the third-party administrator (ChipRewards) and the independent evaluator (UNR). This core group, under the direction of DHCFFP, will lead the implementation and activities for sustaining the Nevada MIPCD Program. This forum will continue throughout the grant period for ongoing communication and coordination of the program. It will be critical for these entities to continue collaborating in every aspect of the Nevada MIPCD Program.

As part of the Nevada MIPCD Program, DHCFFP will organize a MIPCD Advisory Committee. The MIPCD Advisory Committee will serve as an important advisory mechanism

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for the Nevada MIPCD Program, and will assist with finalizing project plans during the implementation period. This assistance will include a significant emphasis on development of consistent program information to be used collectively by DHCFP, the Health Division and Program Partners. DHCFP and the Health Division will partner on the MIPCD Advisory Committee to leverage activities of the Nevada Diabetes Council and other advisory bodies. A further description of the organizations that will comprise the membership of this committee is provided under the discussion of stakeholder involvement later in this application narrative.

**Program Targeting**

The first program component of the Nevada MIPCD Program nests incentives in the diabetes disease management programs conducted by Nevada's Medicaid Managed Care Organizations (MCOs). Thus, the prevention goal for this program component is improving the management of diabetes for Medicaid MCO enrollees diagnosed with that condition.

Current scientific evidence demonstrates that much of the morbidity and mortality of diabetes can be prevented or delayed by aggressive treatment with diet, physical activity, and new pharmacology approaches to normalize blood sugar levels, blood pressure, and lipids. Unfortunately, a wide gap still exists between current and desired diabetes care and practices. Public awareness about the seriousness of diabetes and its treatment is low, despite the fact that the disease is one of the leading causes of death and disability in the United States.

The primary data source used to describe the burden of diabetes in Nevada is the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is based upon a randomly selected telephone interview sample of Nevadans over age 18 years. There are limitations to the BRFSS data in terms of the representations of all regions in the state and all population groups. The

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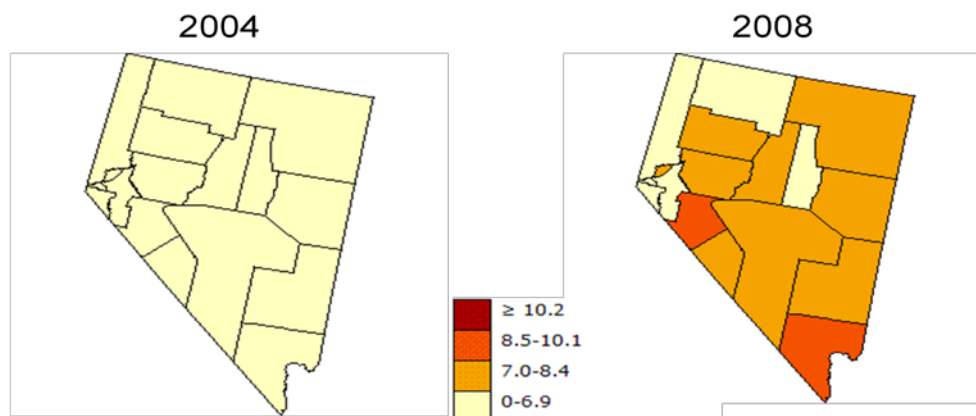
frequency of responses by a particular population group (e.g. racial and ethnic minorities) may be rather small, so in several instances multiple years of data were aggregated, or counties of the state were combined (rural counties and Carson City) to achieve reliable frequencies.

Nevada has been collecting BRFSS data since 1992. **Diabetes is a common disease in Nevada. In 2007, an estimated 217,467 adults in Nevada, or 11.0 %, have been diagnosed with diabetes.** (2007 BRFSS, based on a population of 2.6 million with 75% of that population classified as adults). Diabetes is a serious disease in Nevada as evidenced by the following:

- High blood pressure rates for adults with diabetes in Nevada (66.5%) are more than double the rate of those who do not have diabetes (27.0%).
- Adults with diabetes are two to four times more likely to have heart disease or suffer a stroke than people without diabetes.
- In 2005, 45% of lower extremity amputations were performed on patients with a primary diagnosis of diabetes. (2005 BRFSS)
- Diabetes is a leading cause of new cases of end-stage renal disease (ESRD).

The trend for diabetes prevalence in Nevada is similar to that of the U.S. As other states, Nevada has experienced a rapid rise in the number of individuals diagnosed with diabetes.

FIGURE 1: Age-Adjusted Estimates of the Percentage of Adults with Diagnosed Diabetes in Nevada



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Diabetes is also a costly disease in Nevada:

- In Nevada, costs for diabetes health care and related treatments runs about \$167 million annually.
- In 2005, Nevada's diabetes hospitalization costs totaled about \$100 million. Of this amount, Nevada Medicaid reimbursed \$19,343,893.

Therefore, DHCFP and its MCO partners have a mutual interest in improving the management of diabetes for MCO members through incentivizing participation in intervention programs, behavior change and the achievement of positive health outcomes. DHCFP envisions that the Nevada MIPCD Program will provided valuable lessons that can be incorporated into its Medicaid Quality Assessment and Performance Improvement Strategy (Quality Strategy). DHCFP developed the Quality Strategy in accordance with the Code of Federal Regulations (CFR), at 42 CFR 438.200 et. seq. to continually improve the delivery of quality health care to all Medicaid and Nevada Check Up recipients.

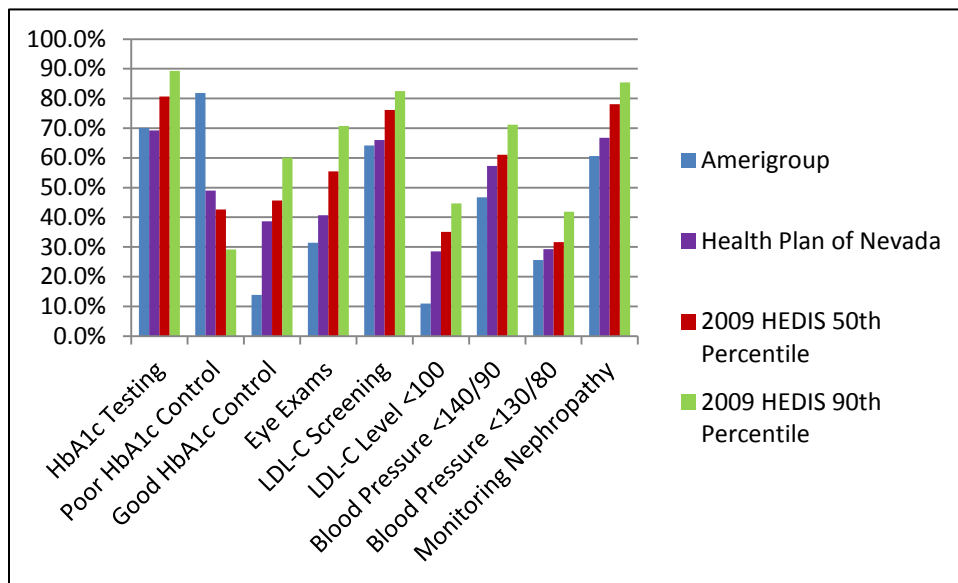
DHCFP's quality strategy describes its processes to identify, define, collect, and report MCO performance data for DHCFP-required performance measures. DHCFP uses HEDIS performance measures. DHCFP tracks MCO performance for each of the required performance measures, including *Comprehensive Diabetes Care*. In collaboration with the MCOs, DHCFP identifies and monitors such indicators to measure the MCOs' success in improving access to care and quality and timeliness of services provided to Nevada Medicaid and Check Up recipients.

DHCFP contracts with **Health Services Advisory Group, Inc. (HSAG)**, an **external quality review organization (EQRO)**, to conduct federally mandated EQR activities in accordance with 42 CFR 438.358. HSAG has served as the EQRO for DHCFP since 2000. The 2009–2010 EQR Technical Report completed by HSAG noted that “while the HPN diabetic care performance

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measures demonstrated an increase over the previous measurement period, the rates still fell short of the HEDIS 50th percentile. Similarly, Amerigroup’s performance for the diabetes care measures fell below the HEDIS 50th percentile.” Incentives offered in the past for health improvement have been small. **This grant provides the opportunity to analyze the impacts of incentives, without the confounding affects of pre-existing significant incentives.**

Figure 2: 2010 Medicaid HEDIS Results for Nevada Managed Care Organizations



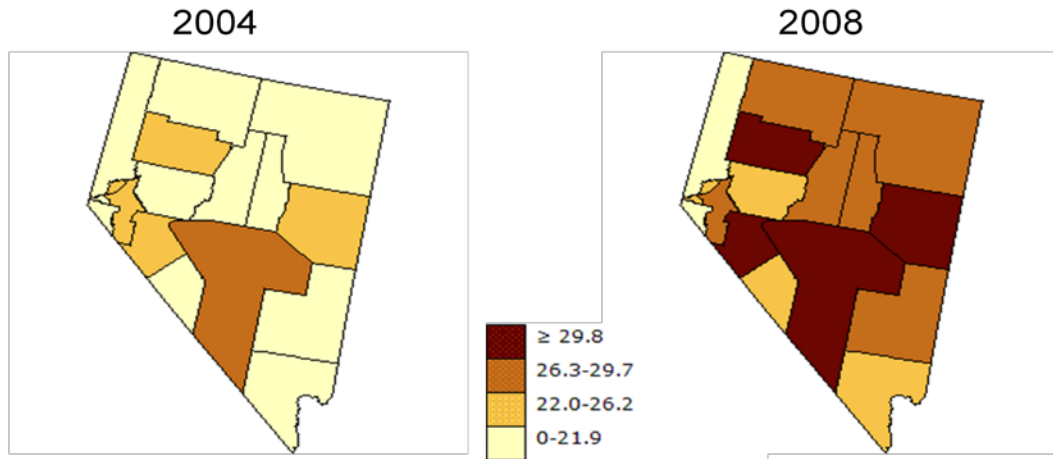
The FFS program component of the Nevada MIPCD Program will also address Medicaid beneficiaries diagnosed with diabetes. The good news is that research also shows that type 2 diabetes can be prevented or delayed in the 41 million people with pre-diabetes--about 40 percent of U.S. adults, ages 40-74. These high risk adults can do this by losing a modest amount of weight by getting 30 minutes of physical activity 5 days a week, and making healthy food choices. **In addition to adult FFS beneficiaries already diagnosed with diabetes, the FFS program component of the Nevada MIPCD Program will also include an incentive program for overweight or obese adults at high-risk for developing diabetes or have prediabetes.** The



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prevention goal for this intervention will be controlling or reducing weight and avoiding the onset of diabetes.

FIGURE 3: Age-Adjusted Estimates of the Percentage of Adults Who Are Obese in Nevada



Finally, the FFS program component of the Nevada MIPCD Program will also include an incentive program intended to provide overweight children with the knowledge and tools to create healthier lifestyles and decrease their health risks. Overweight individuals often have elevated cholesterol, higher blood pressure levels, and increased insulin resistance as well as low self esteem. The prevention goal for this intervention will include controlling or reducing weight, lowering cholesterol, lowering blood pressure, and avoiding the onset of diabetes.

**Comprehensive and Evidence-based**

The preventive services that comprise the program components for the Nevada MIPCD Program are evidence-based, including incentives for supplemental services. As previously noted, the first program component of the Nevada MIPCD Program nests the incentive program in the diabetes disease management programs conducted by Nevada’s Medicaid MCOs. The Guide to Community Preventive Services defines disease management as “an organized, proactive, multicomponent approach to healthcare delivery for people with a specific disease,

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such as diabetes. Care is focused on and integrated across the spectrum of the disease and its complications, the prevention of comorbid conditions, and the relevant aspects of the delivery system.”

The Task Force on Community Preventive Services recommends diabetes disease management on the basis of strong evidence of effectiveness in improving:

- Glycemic control
- Provider monitoring of glycated hemoglobin (GHb)
- Screening for diabetic retinopathy

Sufficient evidence is also available of its effectiveness in improving:

- Provider screening of the lower extremities for neuropathy and vascular changes
- Urine screening for protein
- Monitoring of lipid concentrations

Although a number of other important health outcomes were examined, including blood pressure and lipid concentrations, the Task Force determined that data are insufficient to make recommendations based on these outcomes.

For Medicaid MCO participants with diabetes, rewards will be provided to program participants for completion of key tests and exams, and over time for achieving and/or maintaining control of key diabetes indicators. Incentivized tests and exams are based on the Guide to Clinical Preventive Services which contains the U.S. Preventive Services Task Force (USPSTF) recommendations on the use of screening, counseling, and other preventive services that are typically delivered in primary care settings. The USPSTF, an independent panel of experts supported by the Agency for Healthcare Research and Quality (AHRQ), makes

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recommendations based on systematic reviews of the evidence related to the benefits and potential harms of clinical preventive services.

The incentivized preventive services, and associated clinical measures, are tracked with mandatory HEDIS reporting requirements for Nevada's Medicaid MCOs. Thus, an explicit goal of the Nevada MIPCD Program is to examine the impact of incentives on improvement in these population health measures. MCO participants enrolled in the Nevada MIPCD Program will receive a multi-tiered incentive approach based on plan enrollment. Incentive tiers for all MCO program participants include:

- Behavior change (i.e. e.g., getting themselves tested and discussing test results with their doctor); and
- Achievement of health goals (glycemic control, reduced cholesterol and reduced blood pressure).

Incentive coupons will be distributed to members, along with information explaining how to obtain the incentives. Each coupon for screening and other preventive services, called a promotion, represents a point value that can be redeemed from a customized catalog of rewards as each participant engages in targeted behaviors. These coupons would be individualized to each participant based on data mining and analysis inherent in each MCO's disease management program. That is, participants who have not obtained the requisite tests or exams would be incentivized to do so.

To earn points, participants will be required to have the laboratory test or services performed, return to the provider's office to discuss the results, and develop a plan of self care based on the results. The coupon would be signed by rendering providers based on services performed and then returned via mail by the member to earn incentive points redemption. Written education to

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providers for completion of the incentive coupons will also be distributed throughout the MCO provider networks.

The second tier incentive structure related to achievement of health outcomes will be applied for the year subsequent to enrollment in the Nevada MIPCD Program. The same screening or preventive services laboratory test or services performed following program enrollment would be incentivized at established intervals. The MCO participant would receive additional bonus points for achieving or maintaining selected outcome measures known to be critical indicators of improved management of diabetes. Incentive points would be awarded and available for redemption upon completion of the exam via the same method whereby the coupon, containing the actual lab value, is signed by the provider and mailed by the member.

TABLE 1: MCO Participant Promotions for Improved Diabetes Management

<b>Points</b>	<b>Promotion</b>	<b>Value</b>
500	DM program consent and engagement	\$ 5.00
2500	HbA1c - at program enrollment	\$ 25.00
2500	LDL-C Screening - at program enrollment	\$ 25.00
2500	Blood Pressure - at program enrollment	\$ 25.00
1500	Eye Exam - at program enrollment	\$ 15.00
1500	Foot Exam - at program enrollment	\$ 15.00
1000	HbA1c - at 6 months	\$ 10.00
2500	Good HbA1c Control - at 6 months	\$ 25.00
1000	LDL-C Screening - at 6 months	\$ 10.00
2500	LDL-C Level <100 - at 6 months	\$ 25.00
1000	Blood Pressure - at 6 months	\$ 10.00
2500	Blood Pressure <140/90 - at 6 months	\$ 25.00
1000	HbA1c - at 12 months	\$ 10.00
2500	Good HbA1c Control - at 12 months	\$ 25.00
1000	LDL-C Screening - at 12 months	\$ 10.00
2500	LDL-C Level <100 - at 12 months	\$ 25.00
1000	Blood Pressure - at 12 months	\$ 10.00
2500	Blood Pressure <140/90 - at 12 months	\$ 25.00
1500	Eye Exam - at 12 months	\$ 15.00
1500	Foot Exam - at 12 months	\$ 15.00
<b>Total Potential Incentive Value</b>		<b>\$ 350.00</b>

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Actively enrolled participants who are members in HPN's diabetes disease management program would have an additional incentive structure for participation in a Weight Management Program and Support Group. These additional incentives would be triggered if the member has a body mass index (BMI) of 30 or greater. HPN members meeting this criterion will be referred to a Weight Management Program which includes positive reinforcement techniques. Targeted members will be incentivized for participation in a weight management class. After completing the weight management class, the health plan member has the option to continue with the weight management support group.

The Weight Management Program includes:

- a personal plan to make positive changes in eating and exercise habits,
- a personal plan to identify environmental and emotional triggers to control their habits and improve self-esteem,
- a strategy to prepare the person for success by discussing stress management and time management techniques,
- the weight management class that consists of two hour classes once a week for 3 weeks taught by a Registered Dietitian (R.D.), and
- a 138 page workbook and food and exercise diary.

The Weight Matters Support Group is a continuation of the Weight Management Program. To be eligible for this Weight Management Group, participants must have attended a weight management class through HPN (at least 2 out of the 3 sessions) or a weight management one-on-one consultation. The groups include:

- a combination of nutrition and fitness, while incorporating a positive learning

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environment,

- teaching about behavioral modification and life skills to promote a high quality of life,
- one hour per week support group sessions for 12 weeks taught by a Registered Dietician (R.D.) and the ability for participants to continue attending even after completing the 12 weeks,
- a 152 page workbook and food and exercise diary, and

These HPN members will be eligible for the incentives as listed above for all health plan members in diabetes disease management programs and the additional incentives listed below.

TABLE 2: MCO Participant Promotions for Improved Diabetes Management

Points	Promotion	Value
1250	Completion of Weight Management Class (3 session max)	\$ 12.50
500	Attendance at Weight Management Support Group (12 session max)	\$ 5.00
<b><i>Additional Potential Incentive Value</i></b>		<b><i>\$ 97.50</i></b>

Under the second program component of the Nevada MIPCD Program available for FFS beneficiaries, enrolled participants would also have access to a similar multi-tiered incentive approach. The key difference in this component is that the incentive structure will include supplemental services that are not available under the Medicaid State Plan. Thus, participants who initiate efforts to improve their health through enrollment in the Nevada MIPCD Program will receive access to various preventive programs only available through the MIPCD Program and that are not otherwise covered by Medicaid.

One such program is Diabetes Self Management Education. The Southern Nevada Health District, through a partnership with the Nevada Diabetes Prevention and Control Program, offers

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a six week evidence-based program in English and Spanish. This program, held at community centers and churches, is to help people with diabetes or people at risk of developing diabetes better manage their health and decrease their risk of diabetes-related complications. The program utilizes the evidence-based Diabetes Conversational Maps provided by Healthy Interactions, Inc. and Merck Pharmaceutical along with activities from the CDC National Diabetes Education Program's Road to Health Toolkit. The Conversation Map tools along with supporting materials are approved and meet ADA recognition criteria for a complete DSME/T curriculum. A similar Diabetes Self Management Education program is offered by UMC at its clinic.

The six week evidence-based program includes education on diabetes self management and strategies to improve blood sugar control through increased physical activity and improved eating habits. Each session will last approximately two hours. Each participant is provided a binder with several handouts including a Nevada Diabetes Resource Directory for low cost clinic information. Each participant is asked to complete a pre-test and registration form. Upon completion of the course, each participant is asked to complete a post-test and receives a certificate of completion. Topics include:

- **Session 1: On the Road to Better Managing Your Diabetes:** Participants will learn the basic concepts of managing diabetes.
- **Session 2: Diabetes and Healthy Eating:** Participants will participate in a detailed discussion about the connection between food and diabetes and the importance of healthy eating.
- **Session 3: Diabetes and Healthy Eating/Road to Health Toolkit Activities:** This session is a continuation of session 2 and engages the participants in a nutrition activity.
- **Session 4: Monitoring Your Blood Glucose:** Participants will discuss the importance of

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monitoring blood glucose, managing high and low blood glucose, and how to use the blood glucose testing results to better manage diabetes.

- **Session 5: Continuing Your Journey with Diabetes:** Participants will discuss the ABCs (A1C, blood pressure, and cholesterol) of diabetes, possible medication options, what insulin is and how it works, and possible diabetes complications.
- **Session 6: Resources & Road to Health Toolkit Physical Activity:** Participants will learn how physical activity can help them manage their diabetes. A physical activity demonstration.

The incentive structure for adult participants with diabetes in the FFS system will mirror that for program participant with diabetes in MCOs except all participants will be incentivized to receive the supplemental services offered and receive additional follow up at the three month mark to measure outcomes.

TABLE 3: FFS Participant Promotions for Improved Diabetes Management

Points	Promotion	Value
500	DM program consent and engagement	\$ 275.00
2500	HbA1c - at program enrollment	\$ 25.00
2500	LDL-C Screening - at program enrollment	\$ 25.00
2500	Blood Pressure - at program enrollment	\$ 25.00
1500	Eye Exam - at program enrollment	\$ 15.00
1500	Foot Exam - at program enrollment	\$ 15.00
1000	HbA1c - at 6 months	\$ 10.00
2500	Good HbA1c Control - at 6 months	\$ 25.00
1000	LDL-C Screening - at 6 months	\$ 10.00
2500	LDL-C Level <100 - at 6 months	\$ 25.00
1000	Blood Pressure - at 6 months	\$ 10.00
2500	Blood Pressure <140/90 - at 6 months	\$ 25.00
1000	HbA1c - at 12 months	\$ 10.00
2500	Good HbA1c Control - at 12 months	\$ 25.00
1000	LDL-C Screening - at 12 months	\$ 10.00
2500	LDL-C Level <100 - at 12 months	\$ 25.00
1000	Blood Pressure - at 12 months	\$ 10.00



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2500	Blood Pressure <140/90 - at 12 months	\$ 25.00
1500	Eye Exam - at 12 months	\$ 15.00
1500	Foot Exam - at 12 months	\$ 15.00
<b><i>Total Potential Incentive Value</i></b>		<b>\$ 605.00</b>

The YMCA’s Diabetes Prevention Program (YDPP) helps those at high risk of developing type 2 diabetes adopt and maintain healthy lifestyles to reduce their chances of developing the disease. The program is based on research funded by the National Institute of Health and the Centers for Disease Control and Prevention (CDC) which showed that by eating healthier, increasing physical activity and losing a small amount of weight, a person with prediabetes can prevent or delay the onset of type 2 diabetes by 58%. A program description of this evidence-based program is provided in Appendix B. Research publications are available upon request.

This program is conducted in a group setting by a trained Lifestyle Coach. The coach helps participants change their lifestyle by learning about healthy eating, physical activity and other behavior changes over the course of 16 one-hour sessions. After the initial 16 core sessions, participants meet monthly for added support to help them maintain their progress. The program goals are to reduce body weight by 7% and increase physical activity to 150 minutes per week.

TABLE 4: YMCA Diabetes Prevention Program Promotions

<b>Points</b>	<b>Promotion</b>	<b>Value</b>
25000	Program Enrollment	\$ 250.00
1500	Goal Achievement - at week 6	\$ 15.00
1500	Goal Achievement - at week 7	\$ 15.00
1500	Goal Achievement - at week 8	\$ 15.00
1500	Goal Achievement - at week 9	\$ 15.00
1500	Goal Achievement - at week 10	\$ 15.00
1500	Goal Achievement - at week 11	\$ 15.00
1500	Goal Achievement - at week 12	\$ 15.00
2000	Program Completion - at week 12	\$ 20.00
7500	Weight Loss >5% - at week 12	\$ 75.00
5000	Retention of Weight Loss - at 4 months	\$ 50.00

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5000	Retention of Weight Loss - at 5 months	\$ 50.00
5000	Retention of Weight Loss - at 6 months	\$ 50.00
<i>Additional Potential Incentive Value</i>		<i>\$ 600.00</i>

The Children’s Heart Center Nevada’s Healthy Hearts program is an evidence-based program ranked as Level II-3 as evidence obtained from the program has been gathered at multiple times with and without intervention. Evidence collected from this program has been used to analyze the effectiveness of a comprehensive 12 week program on a variety of factors; cholesterol and blood lipid levels, insulin resistance, inflammatory responses, hemodynamic responses, self esteem, fitness levels and behavioral change. This comprehensive, evidence based program has proven to reduce these risk factors in over half of all participants. Numerous abstracts and papers have been published. See Appendix C for research publication on this program. Detailed abstracts and publications are available upon request.

This 12 week program includes individualized nutritional counseling with a Registered Dietitian; physical fitness assessment and monitored exercise program overseen by an Exercise Physiologist; and one on one counseling and motivational coaching with a PhD Psychologist. Educational materials and weekly nutrition, behavioral, and exercise goals are provided. All aspects of the program are overseen by a pediatric cardiologist. This program is intended to provide overweight children with the knowledge and tools to create healthier lifestyles and decrease their risks for heart disease. Overweight individuals often have elevated cholesterol, higher blood pressure levels, and increased insulin resistance as well as low self esteem. The program includes education of participants on healthy lifestyles and behavior modification techniques measured by a behavior monitoring intake form. The program aims to help children

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maintain and/or reduce their weight, improve blood lipid values, decrease insulin levels, lower blood pressure levels, and improve self esteem.

At week 6 of the program, participants will earn incentive points based on increased physical activity and program compliance at home. These incentives will be individualized based on each participant’s goal, but will include objective health measures such a BMI. Program participants will be re-evaluated every 3 months as part of a follow-up visit at the practice. Again, specific incentives that can be earned by individuals may be individualized in accordance with specific goals for health improvements achieved for which participants could earn points, to include:

- Weight reduction/maintenance- maintenance or reduction of BMI (Body Mass Index) through nutrition, physical activity, and behavior change.
- Improvement in blood lipid profiles- improvement in fasting blood glucose, decreases in lipid values (LDL, TG) and increases in HDL as a result of improved nutrition and regular physical activity.
- Decrease in fasting insulin levels- improvement of fasting insulin and HgA1c levels to avoid the onset of Type II Diabetes or to better manage the existing condition through nutrition and regular physical activity.
- Lower blood pressure levels- improvement in blood pressure measurements by incorporating regular physical activity and encouraging dietary changes.
- Improved self esteem- Increases in self esteem through peer interaction, goal attainment, and team building as overseen by a psychologist.

TABLE 5: Healthy Hearts Program Promotions

Points	Promotion	Value
25000	Program Enrollment	\$ 250.00
2500	Goal Achievement - at 6 weeks	\$ 25.00
7500	Program Completion - at 12 weeks	\$ 75.00

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5000	Goal Achievement - at 12 weeks	\$ 50.00
5000	Re-evaluation - at 3 months	\$ 50.00
5000	Re-evaluation - at 6 months	\$ 50.00
5000	Re-evaluation - at 9 months	\$ 50.00
5000	Re-evaluation - at 12 months	\$ 50.00
<i>Additional Potential Incentive Value</i>		<i>\$ 600.00</i>

As enrolled Nevada MIPCD Program participants members respond to promotions for desired behaviors and outcomes in the incentive structures previously outlined, they will accumulate points by completing the prescribed activities and/or accomplishing specific health improvements. Participants may then redeem their points for items and services that are both meaningful and valuable to them. These rewards are intended to reinforce healthy behaviors and decisions consistent with identified program goals.

DHCFP plans to engage ChipRewards as a third-party incentives administrator to take advantage of well-structured incentive and reward programs currently operating in the commercial healthcare sector. This third-party incentives administrator will maintain a proprietary software application, ValueSys™, capable of managing the distinct program components and varying promotions under the Nevada MIPCD Program. Use of an existing system will ensure rapid capabilities for setting up promotions, accumulating rewards, simple account management and meaningful redemption opportunities - all critical factors for success of the Nevada MIPCD Program. As participants engage in healthy behaviors or achieve tangible health improvement as reported by Program Partners, the technology platform will be used to track activities, issue points and fulfill rewards as they are chosen.

Each individual participant will be able to select rewards based on the points they earn. Program participant can redeem points for rewards as they are earned or accumulate points in their account to redeem them later for rewards of higher value (\$350 max). Example rewards

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available include sporting goods and exercise equipment, books and apparel, kitchen products or small electronics items that can motivate participants to engage in healthy activities.

FIGURE 4: Sample Incentive Rewards Available for Redemption

Digital Pedometer with Calorie Counter  1,537 Points	Weight Watchers New Complete Cookbook  3,089 Points	Saucony Kids Running Shoe  5,870 Points	Digital Heart Rate Monitor & MP3 Player  6,390 Points	Pro-Form Mini Stepper  9,730 Points
Total Fitness Pedometer Watch  14,086 Points	Cuisinart Juice Extractor  21,827 Points	Body Flex Elliptical Trainer  30,376 Points	Apple iPod Classic MP3 Player  31,919 Points	

For example, some participants elect to redeem points immediately for exercise equipment to use for increased physical activity, while others may want to accumulate points to get the newest iPod. With ChipRewards’ customizable redemption network, reward choices will be configurable by target group, and can be as wide and diverse or as narrow and defined as an incentive strategy for each program Partner dictates. Economic research on incentives emphasizes the importance of habit formation. Goods such as cooking equipment may support the development of new eating habits, while new apparel may support ongoing commitment to weight-loss/fitness habits.

DHCFP will also explore the use of vouchers that can be used to purchase fruits and vegetables at participating farmers’ markets and local grocers, as well as vouchers for health club memberships. Produce vouchers would be modeled on the Healthy Bucks Program piloted in the South Bronx by the New York City Department of Health and Mental Hygiene in 2005 and expanded to now include 60 participating markets in the Bronx, Brooklyn and Harlem. Health

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club membership vouchers would be modeled on Idaho's Preventive Health Assistance (PHA) benefits for Medicaid beneficiaries implemented in 2006.

Program participants will have access to the ValueSys™ web-based platform with 24/7 access that enables participants to view earned points in their account online and redeem rewards. To the extent possible, access to the system will be made available at Program Partners' locations. A hard copy rewards catalog will be available for participants without Internet access. Participant can check their account status and redeem points for rewards by contacting the MIPCD Program Coordinator.

### **Promotion and Outreach**

Nevada will use brochures, letters, web content, and other informational material to inform stakeholders and potential participants of the Nevada MIPCD Program. DHHS will develop a website for information about the Nevada MIPCD Program. When operational, the website will provide information regarding who is eligible to participate in the program, describe the incentives that may be available to specific target groups of participants, and list referral contact information. The website can also contain links to Program Partners' websites for additional information.

Outreach and education strategies for potential participants with diabetes enrolled with Medicaid MCOs include mailers, direct and automated calls to reach eligible participants who have not yet joined the program. Similar strategies are used on an on-going basis to educate and engage existing disease management participants for this program.

Examples of key outreach and education strategies include:

- mailings to newly identified members with diabetes with educational brochures, layperson guidelines and offers to join the program,

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- direct calls by MCO clinical and non-clinical staff to encourage members to join the program,
- automated outreach calls to encourage participation by eligible members in the program,
- mailings to existing program participants to educate them on key health issues, remind them about key tests and exams and shots, and invite them to in-person classes and events,
- direct phone calls to encourage existing members to be compliant with their health, and
- direct outreach through in-person health education classes and health events to encourage appropriate management of health issues.

On an ongoing quarterly basis, providers receive profiles which contain confidential lists of members with diabetes who are on their panels. These lists are designed to help providers get individuals in for health care and services and to determine who needs the key tests and exams. These profiles are emailed confidentially and/or mailed to providers on a quarterly basis. These packets for providers include provider profiles, educational material order forms and other clinical management information. Providers also may refer members to these programs and services as they see a need.

Outreach to potential participants for YMCA's Diabetes Prevention Program (YDPP) will be coordinated with the YMCA to reach out to multiple referral sources in the community to identify and engage individuals that qualify for participation following the *Building Community Support and Generating Referrals for Your YMCA's Diabetes Prevention Program Guide*. Several tools have been designed to help get the word out about the YDPP. These tools have been reviewed and approved by the CDC and the Diabetes Prevention and Control Alliance

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launched by UnitedHealth Group. It is critical that Nevada speak in the standard language about this national program. Currently materials available include:

- Consumer-focused brochure with registration information
- Physician-focused brochure with referral form
- Consumer-focused flyer
- Physician/public health-focused flyer
- Suggested Web copy
- Suggested program guide copy
- Lunch and Learn PPT

Healthy Hearts, UMC and the Southern Nevada Health District programs will also supply referring physicians and community partners with brochures and other written material describing the preventive program offered and the referral process. DHCFP anticipates that additional materials will need to be developed for the Nevada MIPCD Program. Nevada is fortunate to be partnering with the YMCA and can use many existing YDPP outreach mechanisms as models for other materials that will be needed for the Nevada MIPCD Program.

The Nevada MIPCD Program will also leverage the experience of ChipRewards in applying behavioral science and population health management principles to effectively design outreach to potential program participants. Recognizing that effective marketing and communication strategies are essential to the success of a program, ChipRewards designs client-branded promotional materials to engage populations and motivate and reinforce behaviors. DHCFP program staff will develop an information packet with the assistance of the third-party incentives administrator and input from the Nevada MIPCD Program Advisory Council to supplement existing materials and increase educational efforts.



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Information will be written in a consumer friendly style and presented in either a stand-alone format or included with the Participant Enrollment Packet. Based on input from stakeholders, DHCFP, working collaboratively with the Health Division, will develop a Nevada MIPCD Program Fact Sheet, Frequently Asked Questions and other material for inclusion in the Participant Enrollment Packet. An Informed Consent Form will also be included in the Participant Enrollment Packet. These materials will be provided to CMS upon completion and draft materials will be reviewed and approved prior to implementation.

**Participant Recruitment and Enrollment**

When recruiting participants and building referral sources, it is the primary responsibility of the Program Partner to verify that potential participants actually qualify for the Nevada MIPCD Program. DHCFP, working collaboratively with the Health Division, will develop a Participant Enrollment Packet. While subpopulations of potential participants may receive different information about program interventions based on the appropriate program targeting, all participants will receive a Participant Enrollment Packet that has specific common materials used by all Program Partners. These uniform materials include a Nevada MIPCD Program Fact Sheet, Frequently Asked Questions, and an Informed Consent Form.

**MCO Diabetes Disease Management** – The target population for the proposed program component for improved management of diabetes for Medicaid health plan members will be identified by the MCOs through a variety of means currently used to recruit members to participate in diabetes disease management programs. Participants are identified and enrolled at the earliest opportunity through several sources. HPN identifies members with diabetes through a review of the electronic diabetes registry based on review of health plan claims and encounters data. The total HPN population equals 665 members with diabetes who are enrolled in Health

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Plan of Nevada Medicaid products. Amerigroup also identifies members with a diagnosis of diabetes through claims data mining and predictive modeling. Total Amerigroup member population with coded diagnosis of diabetes is 546; 515 Medicaid MCO members are enrolled in disease management

**UMC and /Southern Nevada Health District** – The target population for diabetes self-management education programs offered by UMC’s Lied Clinical and the Southern Nevada Health District included adult Medicaid FFS beneficiaries who have a documented diagnosis of diabetes.

**YMCA Diabetes Prevention Program** – The target population for this proposed program component includes participants 18 years of age or older, overweight or obese (BMI > 25; 22 for Asians) and at high-risk for developing diabetes or have prediabetes, as evidenced by:

- At least one of the following:
  - A1C must be 5.7% - 6.4%
  - Fasting Plasma Glucose must be 100 - 125 mg/dl
  - Random or casual blood glucose must be 140 - 199 mg/dl
  - 2-hour (75 gm glucola) Plasma Glucose must be 140 – 199 mg/dl
  - Prediabetes Diagnosis
  - Gestational Diabetes Diagnosis (diabetes during pregnancy)
- OR at least two of the following:
  - Blood pressure is 140/90 or higher
  - Elevated cholesterol levels
  - Participates in physical activity less than two times per week
  - Has or had a parent or sibling with diabetes

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- Is 45 years of age or older

**Healthy Hearts Program** – The target population for this proposed program component includes children serviced in FFS between the ages of 7-18 years of age that have any of the following: elevated BMI, dyslipidemia, hypertension, hyperinsulinemia or other co-morbidity.

During the initial contact, a representative from the respective Program Partner will inform the potential participant of their option to participate in the Nevada MIPCD Program. The initial enrollment in the respective program component will explain the option to participate in or not to participate in a research project. During this initial contact, the Program Partner representative will discuss the Nevada MIPCD Program, the research component and informed consent about participation. If the participant elects to participate in the Nevada MIPCD Program, the participant will sign and receive a copy of the Informed Consent Form as part of the Participant Enrollment Packet.

Upon enrollment in the Nevada MIPCD Program, Program Partners will forward the Participant Enrollment Packet to DHCFP Program Coordinator. The Program Coordinator will verify the Informed Consent has been completed and work with the third-party incentives administrator to establish an individual account for the participant in the automated end-to-end technology solution. This technology will be used for establishing and tracking promotions, providing meaningful and customizable electronic redemption of incentive rewards, and reporting on participant achievements and incentive options. Simultaneously, the DHCFP Program Coordinator will establish the initial promotions available to the participant based on data provided by the Program Partner. Following the receipt of the account, the third-party incentives administrator will distribute an enrollment identification card to the participant.

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To address the issue of loss of Medicaid eligibility that could confound evaluation of the impacts of incentives, DHCFP proposes that incentives continue to be available for enrolled program participants who may lose Medicaid eligibility. Additionally, FFS program participants enrolled in the Nevada MIPCD Program who transition from FFS into managed care would continue to have access to the supplemental services programs in which they were enrolled.

**Informed Consent and Guardianship**

DHCFP will require that all individuals, or their legally authorized representative (i.e., parent, guardian, or managing conservator of a minor individual, or a guardian of an adult), participating in the Nevada MIPCD Program be informed of all their rights and options for participating in the program and that participation is completely voluntary. This includes acceptance of incentive and the consent to participate in the evaluation component of the program, including the potential for any random assignment in accordance with the final evaluation design.

The Informed Consent Form will be signed only by the individual being enrolled in the Nevada MIPCD Program or those who have legal authorization to act in the individual's behalf. For children, the parent's consent and the child's assent is needed. Informed consent will distinguish between enrollment in the Nevada MIPCD Program versus randomization for the research study contemplated later in this application narrative. The final Informed Consent Form will be developed prior to grant award. Following input from the MIPCD Advisory Committee, the UNR Office of Human Research Protection (OHRP) will review the study protocol, including the final Informed Consent Form. UNR maintains federal assurances that show that OHRP is federally compliant. DHCFP and UNR OHRP appropriately view consent as

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a process, not a form. Therefore, the Nevada MIPCD Program will implement an approved recruitment and consent process.

Program Partners will secure the appropriate signatures on the Informed Consent Form which indicates that a participant and/or legal representative has been informed and are voluntarily, without coercion, choosing to participate in the Nevada MIPCD Program. The Informed Consent Form is merely the documentation of informed consent, and does not, in itself, constitute informed consent. A meaningful informed consent process ensures that the participant understood what was being agreed to or truly gave his/her voluntary consent. Therefore, the Informed Consent Form will:

1. Be brief, but have complete basic information
2. Be readable and understandable to most people
3. Be in a format that helps people comprehend and remember the information
4. Serve as a script for the face to face discussions with the potential subjects/participants.

Consent discussions will take place between Program Partners and prospective participants before participants are enrolled in the program. A representative from a Program Partner will be used who sits down during discussions with patients, displays a caring and concerned attitude, and appears willing to spend adequate time to answer questions and concerns. All Program Partners will receive training during the implementation period so that use of materials and informed consent procedures are uniformly applied across the program.

**Stakeholder involvement in the proposal and program**

DHCFP is committed to engaging stakeholders throughout the planning, implementation and evaluation of the Nevada MIPCD Program. For the purpose of engaging stakeholders, outreach has already begun and will continue with critical advocacy organizations. Outreach to date has

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included communications with the following relevant organizations in the state to share project goals and solicit comments on the overall program design for the Nevada MIPCD Program.

- Nevada Diabetes Association
- American Diabetes Association
- American Heart Association
- Juvenile Diabetes Research Foundation

Letters of support obtained are provided in Appendix A. Each one of these stakeholder groups conferred with during the development of this grant application was invited to participate in a stakeholder forum to implement and monitor the program. The MIPCD Advisory Committee will be this forum. DHCFP will maintain this advisory body throughout the grant period. Initial meetings will held in both northern and southern Nevada to solicit input into the development of the Operational Protocol required to be completed during the first year of the program. In addition to the key stakeholders referenced above, Medicaid beneficiaries and providers will be invited to participate in initial meetings to develop the OP and serve on the MIPCD Advisory Committee.

The Core Work Group of Program Partners established by DHCFP consist of a broad cross-section of stakeholder perspectives, Medicaid providers, sister State agencies, and community organizations. These Program Partners were able to expand initial outreach and the number of community groups conferred with during the development of this proposal. Additional letters of support endorsing the proposed Nevada MIPCD Program are included in Appendix A from the following organizations:

- University of Nevada School of Medicine
- University of Nevada Las Vegas, Department of Nutrition Sciences

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- *HealthInsight* Nevada
- Sunrise Children’s Foundation

Stakeholders hold an influential role through the Nevada Diabetes Council, a voluntary body that provides guidance to the Diabetes Prevention and Control Program. DHCFP staff are working with the Health Division to identify clear and comprehensive collaboration opportunities between Nevada Diabetes Council and the Nevada MIPCD Program. It is anticipated that the cross-representation on the Nevada MIPCD Advisory Council and the Nevada Diabetes Council will occur. DHCFP is also seeking to include representation from the Governor’s Office for Consumer Health Assistance, Nevada Legal Services, state medical associations and societies on the Nevada MIPCD Advisory Council.

**Reporting and Evaluation**

The evaluation plan in this application narrative was developed in collaboration with researchers from UNR, who conducted extensive research on incentive programs. Research references and CVs for UNR researcher are provided in Appendix D and Appendix E, respectively. Economic theory and evidence suggests that people respond to incentives. This implies that incentives can be structured to induce behavior change, even if we do not fully understand the matrix of environmental factors that influence decisions. Factors that impact responses to incentives have been studied both at the theoretical and empirical level. Empirical evidence identifies several factors that weaken individual responses to changes in incentives:

- Short program duration is problematic for efforts that aim to induce long-term behavior change [Lindbladh and Lyttkens, 2002, Maréchal, 2009].
- Responses to incentives may be influenced by the individuals’ interactions with key “support” people, and these interactions cannot typically be observed or

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measured directly [Ederer and Pataconi, 2010].

- Limited resources and stress strengthen habit-persistence and blunt the impacts of incentives on individuals' decisions and behaviors [Cawley and Price, 2009] [Nalebuff and Stiglitz, 1983].
- People with low expectations of success may exhibit perverse responses to incentive systems, even though people who expect to succeed exhibited positive responses ([Leuven et al., 2010, Lindbladh and Lyttkens, 2002].
- Incentive systems are designed to create extrinsic motivations for “positive” behavior change, but they may also generate the unintended side effect of weakening pre-existing intrinsic motivations [Loewenstein et al., 2008, Neckermann et al., 2009].
- Low income people are more likely to respond to lottery-style incentive designs [Haisley et al., 2008].
- Long-term behavior change may require both short-term incentives to disrupt habits and information or moral suasion that creates intrinsic motivation to value the new habits [O'Donoghue and Rabin, 2000][Maréchal, 2009]

One researcher concludes by noting that the diversity of mediating factors suggests that optimal incentive design may vary across individuals, and predicts that the “Holy Grail” of incentive design may lie in developing strategies for individualized incentive designs [Nalebuff and Stiglitz, 1983].

Taken together, these results indicate that Medicaid efforts to incentivize healthy behaviors face particularly difficult challenges:

- The Medicaid population is expected to include disproportionate representation of



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groups with weak responses to incentive systems, including individuals with low income, high stress, and low expectations of success.

- The duration of Medicaid eligibility for many recipients is less than one year.
- A substantial proportion of Medicaid recipients are children, for whom the influence of “support” people is likely to be a salient issue.

Compared with wellness and disease management programs designed for a commercial population, these factors suggest that it is particularly important for Medicaid incentive systems to focus on high probability of individual success, and a reward system that recognizes the importance of unobservable interactions with available supports.

The Nevada MIPCD Program proposes a three-part study to test hypotheses about the implications of these issues for incentive design for a Medicaid population. These hypotheses are:

1. Incentivizing improvements in health measurements (such as A1c level), instead of focusing on concrete actions (such as going to get an A1c test) may be counterproductive, if individuals have low expectations of success.
2. Allowing individuals to choose whether to allocate incentive points to health measures may improve performance among the group that elects to award points to health measures, without adversely impacting the performance of the group that does not choose this option.
3. Splitting incentive payments between the parent and the child will induce more behavior change (by the child), than focusing the entire incentive on the child.

All Medicaid participants who are in program components (i.e. MCO disease management program or FFS supplemental services) will be invited to participate in the research study.

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Individuals with diagnoses of illnesses or conditions that preclude participation in an incentive program may be excluded from the study, and the lists of these diagnoses will be developed in collaboration with the administrators of each of the Program Partners. Incentive points and rewards will be tracked and administered by ChipRewards for all three components of the study.

The Nevada MIPCD evaluation team includes two economists and one information systems professor from UNR with experience in health economics, experimental design, statistical analysis, data warehouse design and management, and evaluation reporting. The evaluation team will work with the groups providing data (Medicaid, the MCO's, Healthy Hearts, YMCA, and ChipRewards) during the initial planning phase of the project to ensure consistent data definitions and formats. The evaluation metadata will be defined during the initial planning phase prior to data collection. It is especially important to define a method that will de-identify all data but still consistently link that de-identified data for evaluation. The evaluation team has experience with this process after having recently completed an analysis of Medicaid FFS and managed care costs. This process will be expanded to include data from the additional data sources.

The Nevada MIPCD Program will test the three hypotheses, using three different samples. Within each sample there will be control and treatment groups. Individuals will be assigned randomly into one of these groups. Below is a description of treatment and control groups, data sources and analytical methodologies for each hypothesis tested.

**Hypothesis 1. Incentivizing improvements in health** measurements (such as A1c level), instead of focusing on concrete actions (such as going to get an A1c test) may be counterproductive, if individuals have low expectations of success.

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Adults enrolled in the MCOs' diabetes management programs will be invited to participate in the study. Participants will be randomly assigned to control and treatment groups:

- Control group: This group will not receive any payments.
- Treatment group 1: This group will receive incentives for each test or service. For this group, the incentive plan detailed in Table 1 for the initial enrollment period will be repeated after six months and after one year.
- Treatment group 2: This group will receive compensation according to the tiered system outlined where completion of tasks will be rewarded in the first stage at program enrollment. However, task completion will receive lower rewards at the six-month and one-year marks, and health measures will be rewarded instead. An individual in treatment group 1 will receive less than the reward earned by individuals in Treatment Group 1 who achieve good health measures, but more than Treatment Group 1 individuals who do not.

The study dataset will include:

- Medicaid claims and encounter data (to permit control for health events, such as hospitalization for trauma, that are expected to impact participation or success in achieving goals),
- Medicaid eligibility data, to control for gaps in coverage or loss of coverage,
- results of the psychological assessment of readiness to change, that will be administered by MCO disease management program personnel,
- biometric measurements (e.g. A1c, blood pressure) that will be captured by the MCOs, and
- incentive points and rewards tracked by ChipRewards.

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Multivariate regression analysis will focus on total rewards points, task-completion points, goal-achievement points, and goal-maintenance points as the key dependent variables. The analysis will focus on estimating the impact of incentives and incentive design on each of these dependent variables, controlling for demographic characteristics, readiness for change, healthcare utilization, and diagnoses. This analysis will specifically address the questions of whether shifting rewards points from task-completion to achievement of good health measures (comparing treatment groups 1 and 2) impacts task-completion, and whether the individual's initial measurement impacts the probability that the shift reduces task completion. The analysis will help us understand whether people will not complete the necessary health care tasks in the study when the incentive focuses exclusively on health care outcomes. The analysis will also show whether an initial measurement (such as a very high BMI or weight) for an individual discourages participation in task completion when the incentives focus strongly on health care outcomes that might seem almost unachievable (weight loss/lower BMI). We hypothesize that the initial health measurements, healthcare utilization and readiness to change may influence the individual's assessment of his/her probability of successfully achieving good health measures, and this estimate will mediate the impact of incentive design on the individual's level of task-completion effort. Analysis of the impacts at 6-months and one year will permit estimates of the cumulative effect and consistency of this impact.

**Hypothesis 2.** Allowing individuals to choose whether to allocate incentive points to health measures may improve performance among the group that elects to award points to health measures, without adversely impacting the performance of the group that does not choose this option.

Adult participants in the FFS program component receiving supplemental services designed

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to help individuals increase physical activity and lose weight will be invited to participate in the study. These participants will be randomly assigned to two groups: the control group and the treatment group. Individuals assigned to the treatment group will be permitted to choose whether to assign all of the rewards points to task-completion/participation or to assign some points to goal achievement, as detailed in Table 3.

The study dataset will include all of the data identified for analysis of hypothesis 2, including the biometrics and survey described above for the subset of MCO individuals who participate in the weight management portion of the disease management program. The multivariate analysis will be more complex, because the self-selection feature offers both a challenge and an opportunity.

In the first two hypothesis tests, individuals are randomly assigned to one of the treatment groups or control group and therefore the difference in the post program means is an unbiased estimator of the average treatment effect on the treated (TT). In sample 2 however, we allow for choice-based sampling since individuals can chose whether they want to “invest” part of their stage 1 incentive money to get a return that is conditional on performance. This incentive design implies that individuals who expect to perform better may be more likely to “invest”. Therefore the difference between post-program mean weights may be biased. To account for this we will implement a two step Heckman selection method. For the Heckman selection method to be effective we need a variable that affects participation (i.e. whether an individual chooses to invest) but does not affect the outcome (i.e. whether he loses weight or not). We will use a measure of their risk preference (that will be asked as part of a survey where they will be asked to choose from lotteries) as the first stage identifying variable. We will also implement propensity score matching to evaluate the TT. Heckman and Todd (2008) showed that propensity

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score matching can produce an unbiased estimate, even with choice based sampling, as long as log odds ratio (as opposed to the propensity score) is used to match the treatment and the control group.

Multivariate analysis will be used to identify the characteristics of people who elect to assign rewards points to goal achievement and maintenance. These individuals are essentially choosing to create an incentive analogous to the system offered by the commercial website stick.com. Voluntary creation and use of such systems (also analogous to freezing one's credit cards in water to inhibit impulse-use) is widespread. This analysis will provide a basis for understanding the self-selection mechanisms, to assess whether this strategy could be used to induce people to self-select into programs that are likely to be appropriate and effective for them.

Taken together, the results of the tests of hypotheses 1 and 2 will permit assessment of the costs and benefits of incentivizing task-completion vs. performance in both a Medicaid MCO and FFS population, including identification of subgroups for which each strategy is preferred, and assessment of the degree to self-selection by those subgroups is likely to be productive or counterproductive.

**Hypothesis 3.** Supplementing incentive structures with rewards for the parent/family, in addition to the child, will induce more behavior change (by the child), than focusing the entire incentive rewards on the child. Children enrolled in the Healthy Hearts program will be invited to participate in this study. Participants will be randomly assigned to three groups:

- Control group: This group will receive only the supplemental service, but not additional incentive options.
- Treatment group 1: In this group only the child enrolled in the program will get the incentives.

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- Treatment group 2: In this group the child will receive incentives and additional incentives will be available to the parents. Points may be allocated in a restricted way so that some points can be used to buy only “child specific” goods while other points can be used to buy “adult specific” goods.

The study dataset will include:

- Medicaid claims data (to permit control for health events, such as hospitalization for trauma, that are expected to impact participation or success in achieving goals);
- Medicaid eligibility data, to control for gaps in coverage or loss of coverage;
- Results of the psychological assessment of readiness to change, that is routinely administered to all program participants by the Children’s Heart Center Nevada pediatric cardiology practice;
- Biometric measurements at program enrollment, at program completion and at three-month intervals thereafter; and
- Incentive points and rewards tracked by ChipRewards.

Multivariate regression analysis will focus on total rewards points, participation-related points, goal-achievement points, and goal-maintenance points as the key dependent variables. The analysis will focus on estimating the impact of incentives and incentive design on each of these dependent variables, controlling for demographic characteristics, readiness for change, healthcare utilization, and diagnoses.

The claims and encounter data will be used to estimate short-term cost savings. The analyses described above for each hypothesis test will be repeated, with claims/encounter charges as the dependent variable. The independent variables will include indicator variables for the

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membership in the treatment groups in each hypothesis test, along with control variables for demographic characteristics, CDPS RISK SCORE, health status, "other" healthcare utilization, readiness for change, and other survey variables (for the hypothesis tests that include survey data control variables). The cost variable will be "net amount paid" for the FFS claims, and encounter cost for the MCO data. The MCO encounter costs will be adjusted to reflect Medicaid payments to the MCO's. The estimated coefficients of the treatment group membership variables will provide estimates of the short-term impact of the treatments. Incentives may lead to increased short-term costs, due to the increased expenditures for tests. It will be necessary to rely on published research to extrapolate the long-term impacts of the incentives on costs.

One of the objectives of the proposed study is to estimate the impact of incentives on program participation. Current data from the project suggests a completion rate of about 60%. We will have at least 1500 data points given our sample size. Since there will be two treatment groups and a control group (as discussed above) each group will have at least 500 observations. Given a 5% level of significance and a 10 percentage point anticipated impact, this sample size will achieve a power of 0.915, which is well above the 0.8 benchmark commonly used.