

# Missouri Diabetes Report

January 01

# 2019

---

Report to the General Assembly on diabetes-related efforts in the MO  
HealthNet Division and the Department of Health and Senior Services.

RSMo 191.990



**Part I. Burden of Diabetes in Missouri**

It is estimated that nearly 492,000 adult Missourians had doctor-diagnosed diabetes in 2017, with a prevalence<sup>i</sup> of 10.4% (Table 1), slightly lower than the national median prevalence of 10.9%.<sup>1</sup> In Missouri, the prevalence increased with age, and African Americans had a significantly higher prevalence than white individuals. Adults with a household income less than \$15,000 had a significantly higher prevalence than those with a household income of \$50,000 or greater. Those without a high school education had a significantly higher prevalence than those with high school or higher education. In addition, the prevalence was significantly lower among uninsured adults (5.2%) than among adults who were covered by either MO HealthNet (8.2%) or other types of health insurance (11.2%). This is likely because uninsured adults tend to be younger, and also less likely to be diagnosed even if they have diabetes because of lack of access to healthcare (Table 1). Based on 2013 - 2016 National Health and Nutrition Examination Survey data, it is estimated that 4.3% of people have undiagnosed diabetes.<sup>2</sup> Assuming the same prevalence in Missouri, over 200,000 adults were estimated to have undiagnosed diabetes in 2017. The prevalence of diabetes varies across Missouri counties. In general, the prevalence was higher in the southeast part of Missouri than in the rest of the state in 2016, the most recent county-level data available (Figure 1).

Table 1. Prevalence of Diabetes among Adults age 18 or older, Missouri, 2017

	Number*	Percent (95% CI)**		Number*	Percent (95% CI)
Overall	695,392	14.7	Household Income (\$)		
<i>Diagnosed</i>	491,978	10.4 (9.5 – 11.3)	<15,000	56,112	16.7 (12.6 – 20.8)
Undiagnosed <sup>#</sup>	203,414	4.3 (3.5 – 5.1)	15,000-24,999	52,038	14.7 (11.7 – 17.2)
Age (year)			25,000-34,999	54,210	13.0 (10.0 – 16.0)
18-24	5,709	1.0 (0.8 – 2.0)	35,000-49,999	59,048	12.2 (9.7 – 14.7)
25-44	43,580	2.8 (1.8 – 3.8)	50,000-74,999	44,528	9.2 (7.0 – 11.4)
45-64	229,844	14.4 (12.5 – 16.2)	75,000 or more	122,584	5.6 (4.3 – 7.0)
≥ 65	217,519	21.6 (19.6 – 23.7)	Education		
Race			Less than High School	71,073	15.9 (12.2 – 19.5)
White	400,789	10.3 (9.3 – 11.2)	High School	152,337	10.3 (8.7 – 11.8)
African American	71,774	13.3 (10.2 – 16.4)	More than High School	249,852	9.4 (8.4 – 10.5)
Other	38,163	8.6 (5.3 – 11.8)	Insurance status		
Sex			Uninsured	30,995	5.2 (3.5 – 6.9)
Male	243,225	10.6 (9.2 – 11.9)	Insured	438,258	11.2 (10.2 – 12.1)
Female	250,906	10.3 (9.2 – 11.4)	Medicaid <sup>##</sup>	37,235	15.8 (9.3 – 22.3)

\*The sum of the number of adults in each subcategory may not add up to the total diagnosed number due to rounding and estimation methods.

\*\* CI: Confidence interval.

<sup>#</sup>Estimated based on the 2013-2016 National Health and Nutrition Examination Survey:

<sup>##</sup>2016

Sources: Missouri and National Behavioral Risk Factor Surveillance System (BRFSS), U.S. Census Bureau Current Population Survey

<sup>i</sup> Prevalence: The proportion (usually a percentage) of a population that has a defined risk factor, disease, or condition at a particular point in time.

In 2016, diabetes led to 15,494 emergency room (ER) visits, with an age-adjusted rate of 2.43 visits per 1,000 population. The rate increased steadily with age until age 64, and then leveled off. There were 18,520 inpatient hospitalizations with diabetes as the primary diagnosis in 2016, for an age-adjusted rate of 20.2 hospitalizations per 10,000 population. African-Americans had ER visit and hospitalization rates more than three times that of white individuals. In 2016, 1,508 Missourians died with diabetes listed as the underlying cause, for an age-adjusted death rate of 20.08 per 100,000 population. Both the hospitalization and death rates increased with age, were higher among African-Americans than among white individuals, and were higher among men than among women (Table 2).

**Table 2. Diabetes Emergency Room Visit, Inpatient Hospitalization, and Death Rates<sup>\*</sup>, Missouri, 2016**

	Emergency Room Visit		Hospitalization		Death	
	Number	Rate (95% CI <sup>#</sup> ) per 1,000	Number	Rate (95% CI) per 10,000	Number	Rate (95% CI) per 100,000
Overall	15,494	2.43 (2.40 – 2.47)	18,520	20.2 (19.9 – 20.5)	1,508	20.1 (19.1 – 21.1)
Age (year)						
<15	438	0.08 (0.07 – 0.09)	445	0.83 (0.76 – 0.91)	##	###
15-24	1,229	0.21 (0.20 – 0.22)	1,421	2.3 (2.1 – 2.4)	6	###
25-44	3,995	0.80 (0.77 – 0.82)	3,154	6.2 (6.0 – 6.4)	51	3.3 (2.5 – 4.3)
45-64	6,562	0.92 (0.90 – 0.94)	5,055	7.0 (6.8 – 7.2)	384	23.9 (21.6 – 26.4)
≥ 65	3,270	0.42 (0.41 – 0.44)	3,034	3.9 (3.8 – 4.1)	1,066	109.0 (102.5 – 115.5)
Race						
White	10,461	1.88 (1.84 – 1.91)	8,941	16.0 (15.7 – 16.4)	1,262	18.7 (17.7 - 19.7)
African American	4,232	5.8 (5.6 – 6.0)	3,278	49.4 (47.8 – 51.0)	223	34.3 (30.0 – 39.1)
Sex						
Male	7,553	2.2 (2.1 – 2.2)	5,888	20.0 (19.5 – 20.5)	820	25.1 (23.4 - 26.8)
Female	7,245	2.4 (2.4 – 2.5)	6,721	18.9 (18.4 – 19.4)	688	16.1 (14.9 - 17.3)

<sup>\*</sup> Diabetes as the primary diagnosis for emergency room visits and hospitalizations, and as the underlying cause of death. Age adjusted to the 2000 US Standard Population.

<sup>#</sup> CI: Confidence interval.

##Number too small to display

###Rate is unreliable

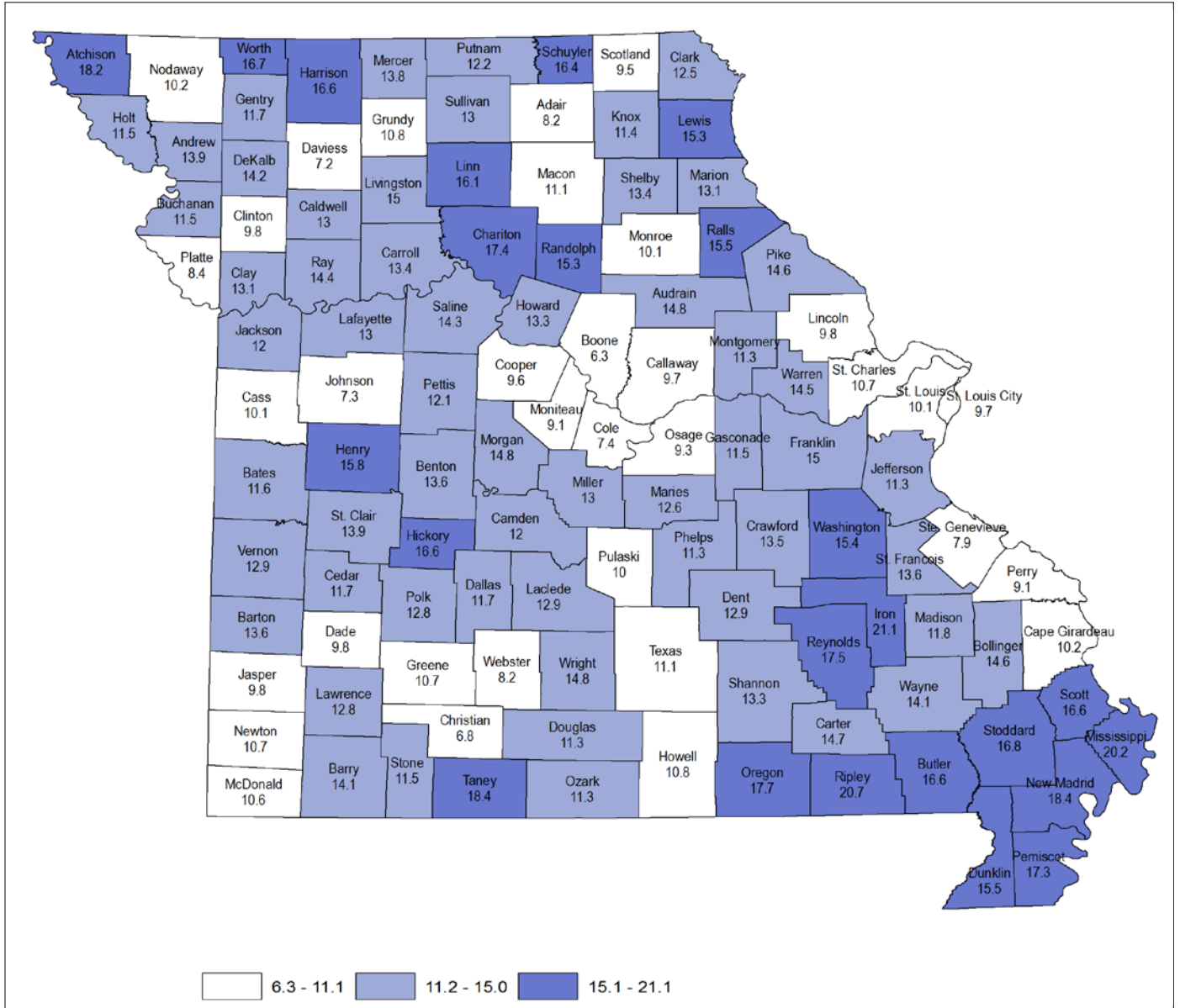
Data Source: Missouri Information for Community Assessment (MICA), and Missouri Department of Health and Senior Services Bureau of Health Care and Data Dissemination

The American Diabetes Association (ADA) estimated that the direct medical cost attributed to diabetes was \$4.92 billion, and indirect cost<sup>ii</sup> was \$1.8 billion in Missouri in 2017, for a total of \$6.7 billion dollars.<sup>3</sup> For detailed diabetes data, including risk factors for diabetes and its complications, preventive care practices among people with diabetes, gestational diabetes and

<sup>ii</sup> Indirect cost attributed to diabetes includes costs due to absenteeism, presenteeism, reduced productivity for those not in labor force, unemployment from disability, and premature mortality.

other information, please visit the Missouri Diabetes Profile at <http://health.mo.gov/data/mica/ASPsDiabetes/header.php?cnty=929>.

Figure 1. Prevalence of Diabetes in Missouri Counties, 2016



Data Source: 2016 Missouri County-level Study

## Part II: Current Programs

### 1. Current diabetes prevention programs at MO HealthNet Division (MHD) include:

#### a. Primary Care Health Home (PCHH) Program

Missouri's Primary Care Health Home State Plan Amendment was formally approved December 23, 2011. Services began January 1, 2012. In July 2011, Department of Social Services, MO HealthNet Division (MHD) solicited applications from primary care providers interested in participating in the PCHH initiative. The PCHH program began with a total of 24 (twenty-four) primary care health home organizations operating health homes in 86 sites throughout Missouri. After two additional open enrollment periods, there are currently 35 PCHH provider organizations with a total of 135 clinic sites providing health home services to more than 24,000 individuals, however MHD is currently reviewing new provider applications that were submitted in another recent open application period, so additional organizations and clinic sites will be added to PCHH in January 2019.

The populations eligible for the PCHH Program originally included those with two or more chronic conditions or one chronic condition and a risk factor for a second. Patients with diabetes are considered to have one chronic condition and be at risk for a second. The eligibility criteria has recently been updated to include pediatric asthma as a stand-alone condition; obesity as a stand-alone condition; and anxiety, depression, and substance use disorder as conditions that require a second qualifying condition or risk factor for enrollment. MHD is currently seeking CMS approval to add chronic pain as a stand alone qualifying condition for PCHH enrollment.

Current enrollment in the Primary Care Health Home Program exceeds 24,000 and has been steadily increasing. An average of 43% of all people enrolled in this population have a diagnosis of diabetes in the electronic medical record's active problem list. This compares to the state prevalence estimate of 14.7% among adults age 18 or older in 2015 (Table 1). Six of the current PCHH organizations show percentages of 30 or less, while the other 31 have averages exceeding 30%. Of note, the prevalence of PCHH participants who have overweight or obesity included as a diagnosis or listed in their active problem list is 60% for adults, as compared to the CDC's 2015-2016 national statistic of prevalence for overweight, including obesity of 71.6% in adults 20 years and older<sup>4</sup>.

Clinical outcomes achieved thus far include but are not limited to clinically significant improvements in LDL levels, blood pressure, and HbA1C levels. The decreases in LDL translate to a 20% decrease in coronary heart disease; the decreases in blood pressure translate to a 16% decrease in coronary heart disease and a 42% decrease in stroke; and the decreases in HbA1c translate to a 21% decrease in diabetes mellitus related deaths, 14% decrease in myocardial infarction, and a 37% decrease in microvascular complications respectively in the impacted population<sup>5</sup>. The PCHH program has also demonstrated reductions in emergency department use and hospital admissions, as well as shown associated cost savings.

MHD is also currently in the process of adding community health worker (CHW) services as reimbursable services by Medicaid. CHWs assist high risk, medically complex individuals with managing their healthcare and addressing needs related to social determinants of health. The decision to determine how to proceed with adding CHW services came as a result of the CHW pilot in southwest Missouri that showed even greater reductions in emergency department visits than individuals enrolled in PCHH who did not have access to a CHW (38% decrease compared to 8% decrease). The pilot also showed greater reductions in hospitalizations (16.6% decrease for individuals with a CHW compared to 6% decrease in individuals who did not have access to a CHW).

**b. Managed Care and Disease Management**

The managed care plans shall provide care management and/or disease management services to select members as outlined below. Members are evaluated by the health plans to determine eligibility for these services.

*Care Management:* The health plans shall provide care management to selected members. The health plans care management service shall focus on enhancing and coordinating a member's care across an episode or continuum of care; negotiating, procuring, and coordinating services and resources needed by members/families with complex issues; ensuring and facilitating the achievement of quality, clinical, and cost outcomes; intervening at key points for individual members; addressing and resolving patterns of issues that have negative quality cost impact; and creating opportunities and systems to enhance outcomes. The health plans may use a Section 2703 designated health home providers or Local Community Care Coordination Program (LCCCP) providers to perform care management functions if the health home practice and LCCCP provider are members of the health plan network.

*Disease management:* Intensive management of a particular disease or syndrome. Disease management encompasses all settings of care and places a heavy emphasis on prevention and maintenance. It is similar to care management, but more focused on a defined set of programs relative to an illness or syndrome.<sup>6</sup>

The health plans shall have disease management programs for major depression, asthma, and at least one of the following: obesity, diabetes, hypertension, or Attention Deficit Hyperactivity Disorder (ADHD). The health plan may use a Section 2703 designated health home providers to perform disease management functions if the health home practice is a member of the health plan network.

*Local Community Care Coordination Program:* The health plans shall develop and provide a LCCCP using a delivery model of choice that provides care management, care coordination, and disease management with a local healthcare provider. All LCCCPs incorporate the following principles: all members will have a selected primary care provider; care is provided by a physician-directed team that collectively cares for the member; care coordination across all aspects of health care; care management services; and recognition and referral to necessary community and social support resources.

*Additional Services:* In addition to the services listed in the comprehensive benefit package, the health plan shall provide specified services to children under twenty-one (21) years of age and pregnant women with Medical Eligibility (ME) codes 18, 43, 44, 45, and 61, including diabetes self-management training for persons with gestational, type I, or type II diabetes.

Healthcare Effectiveness Data and Information Set (HEDIS) data for calendar year 2017 for MO HealthNet managed care plans indicates that 81% of members with a diagnosis of diabetes had a hemoglobin A1C test, an improvement from 78% in 2015. The nephropathy screening test improved to 86% in 2017 from 81% in 2015. And, 55% had a low-density lipoprotein cholesterol test (LDL-C) during the measurement year, an increase from 51% in 2015.

**c. Home Telemonitoring, PageMinder, and Medication Therapy Management**

*Telemonitoring* is a small contracted program for patients who meet specific criteria, including chronic diagnoses such as diabetes, in conjunction with past hospital and/or emergency department visits. The contractor, Oxford Healthcare, supplies in-home monitors that collect patients' vital signs and other clinical information and relay the data electronically to a nursing station for analysis and oversight. If potential problems are detected in values such as those for blood glucose, blood pressure, patient weight, etc., the nursing staff can intervene and/or make a visit to the patient's home. If necessary, the patient will be directed for medical treatment. The goal is to help keep patients out of the hospital and/or emergency department. For state fiscal year 2018 there are 118 participants per month enrolled in the telemonitoring program with Oxford Healthcare.

*PageMinder* is a small contract that provides wireless patient notification to individuals with chronic conditions, including diabetes. Notifications consist of reminders to take medications at scheduled times, to test blood sugar, etc. Goals include helping patients adhere to their treatment regimens so they can avoid unnecessary hospitalizations and emergency department visits. For state fiscal year 2018 there are 558 participants per month enrolled in the PageMinder service.

*Medication Therapy Management (MTM)* is for pharmacist professional services to educate and counsel patients about potential gaps in treatment. For example, a pharmacist will receive a notification that a patient using his or her pharmacy does not have a claim for an annual foot exam, or perhaps no laboratory claim to indicate that he or she had a regular A1C screen. The pharmacist will "reserve" an intervention opportunity and when the patient shows up in the pharmacy, the pharmacist counsels the patient about the need to adhere to evidence-based treatment protocols for their diabetes (among other disease states). The pharmacist must be properly qualified and enrolled to provide and bill MO HealthNet for these services.



Below is the MTM report for time period 11/1/16 – 10/31/17. All patients have a diagnosis of diabetes according to paid medical claims history.

Table 3. Medication Therapy Management (MTM) Usage and Cost Savings, Missouri, 2017

	Unique Patients with Diabetes	Number of patients with MTM interventions	Number of MTM interventions provided for these 17 patients	Pharmacy savings for these 17 patients (annualized)	Medical savings for these 17 patients (annualized)
MTM Messages	66,701	17	38	-\$7,885	\$97,370

The MTM program was approved by Centers for Medicare and Medicaid Services (CMS) effective January 1, 2013 and providers are still enrolling in the program to provide interventions.

**d. Fee-for-Service (FFS) Care Management Pilot**

The MHD care management pilot for the FFS population was developed to focus on the complex FFS population. These participants were chosen based on being medically complex and/or through their utilization of services; and were not eligible to be enrolled in a health home. Eligible participants were chosen based on utilization of services including; frequent inpatient hospitalizations, emergency room use, diagnosis codes, and geographic location. The geographic location was utilized to allow the nurse care managers to be able to complete an initial face-to-face visit with the participant. The program incorporated a combination of face-to-face and telephonic care management focusing on improving health outcomes, enhancing patient education, and affecting how patients utilize healthcare services. The needs of the participant are addressed by the nurse care manager and are individualized to meet the identified needs of each participant. These needs included both healthcare needs as well as social determinants of health. Preliminary results from the pilot evaluation showed a reduction in emergency room visits, leading to a decrease in emergency room costs. The preliminary results also showed a reduction in inpatient admissions and a decrease in the inpatient hospital length of stay.

**e. Biopsychosocial Treatment of Obesity for Youth and Adults**

MO HealthNet is working on providing coverage of biopsychosocial treatment of obesity for youth and adults. These services will be available for MO HealthNet eligible participants ages 5 and older with the goal of improving health outcomes for the youth and adult populations by managing obesity. The focus of these services is on the integration of medical nutrition therapy and behavioral health services to facilitate behavior changes to manage obesity and associated co-morbidities, such as diabetes. The regulation and state plan amendment are in the process of being drafted.

**f. Diabetes Prevention Services**

MO HealthNet is working on providing coverage for Diabetes Prevention Program Services for adults. These services will be available for MO HealthNet eligible participants ages 21 and older with the goal of preventing the progression to type 2 diabetes and improve health outcomes for high-risk adults by managing obesity and associated co-morbidities. The focus of these services is on structured interventions that include behavioral counseling focusing on weight reduction and lifestyle changes recommended by a physician and/or other licensed practitioner. The regulation and state plan amendment are in the process of being drafted.

**2. Current diabetes programs at DHSS include:**

Diabetes programs at DHSS are part of the Bureau of Cancer and Chronic Disease Control and include Missouri Actions to Prevent Chronic Disease and Control Risk Factors (MAP) and Center for Innovation for a Healthier Missouri (CIHM). MAP is part of the 1815 Federal Funding Opportunities which combined funding for diabetes and heart disease. CIHM is funded by the 1817 grant. Many activities for these programs have an integrated infrastructure.

**a. Center for Innovation for a Healthier Missouri (CIHM) and The Alliance**

In late 2018 Missouri received the 1817 Grant - Diabetes and Heart Disease & Stroke Prevention Programs-Innovative State and Local Public Health Strategies to Prevent and Manage Diabetes and Heart Disease and Stroke. The Alliance, built and led by collaboration of 5 public health and medical care organizations, seeks to improve the lives of people living in the St. Louis Metropolitan area, specifically those affected by diabetes and cardiovascular disease. By focusing on designing, testing, and evaluating innovative approaches towards reducing health disparities and the burden of chronic disease, the Alliance will optimize health and race equity across the region. Because the social determinants of health and trauma-informed care are essential factors in the path towards achieving equity, the Alliance is committed to infusing all program activities with a race equity, health equity, and trauma-informed lens. The 5 core members of the Alliance Leadership Team are MO DHSS, St. Louis Integrated Health Network, Saint Louis County Dept. of Public Health, St. Louis City Dept. of Health, and Missouri Primary Care Association (MPCA).

The Alliance proposes to implement 16 strategies in the Target Population area (St. Louis City and St. Louis County), with emphasis on the federally-designated Promise Zone. Selected coordinated innovations will (1) improve and increase referrals for evidence-based self-management/lifestyle programs; (2) increase use of community health workers; (3) utilize the application of telehealth and mobile tools; and (4) increase identification of at-risk patients by community health centers. Strategies to achieve these goals include promoting team-based care, enhancing the role of pharmacists, coordinating referrals to nationally-recognized prevention and management programs, expanding data-driven quality improvement at community health centers, and advocating for health plan coverage. All of this work is made possible by leveraging a well-established network of local, state, and national collaborators. This network includes the Prevention Research

Center of St. Louis (PRC), Regional Diabetes Planning Group, and the St. Louis Area Hospitals Diabetes Collaboration.

**b. National Diabetes Prevention Program (DPP)**

The National DPP is an evidence-based lifestyle change program, developed by CDC, for preventing type 2 diabetes. Fourteen organizations provide the face to face version of the National Diabetes Prevention Program in Missouri. In addition, CDC has approved virtual programs to provide the National DPP. MAP supports these efforts through prediabetes awareness efforts with the “Take It Back” media campaign, hosting bi-annual Missouri DPP meetings, strategic communications, providing training materials, working with employers to offer the program at their worksites, hosting presentations to medical professionals, and expansion of the program into additional areas. CMS began covering the National DPP in April 2018. United Healthcare Group and Anthem are also covering this program. Blue Cross Blue Shield of Kansas City and MO HealthNet have announced plans to cover the program in the future, bringing coverage of the program to 56% of Missouri lives covered. In the 1817 grant CIHM work to have Pharmacies to deliver National DPP.

**c. Establishing Referral Systems**

*The Community e-Connect Program* is a State Innovation Model (SIM) grant to provide bi-directional e-referrals based on a Massachusetts program. Missouri’s initial project is planned between Truman Medical Center, in collaboration with Cerner, and the YMCA of Greater Kansas City. The YMCA will be integrating their National Diabetes Prevention Program and Healthy Heart Ambassador Programs.

*The COMPASS Database* allows physicians access to information on National Diabetes Prevention Programs (DPP) and the Diabetes Self-Management Program (DSMP) by geographic area and allows them to refer patients using the tool.

DHSS is working with the MPCA to develop the *MPCA DRVS Tool* to identify persons with prediabetes based on their medical records, simplifying the referral process to local National DPPs from Community Health Centers (CHC).

**d. Chronic Disease Collaborative**

The Chronic Disease Collaborative program focuses on improving the quality of care received by disparate populations utilizing CHC. The program supports the use of Electronic Health Records (EHR) and a population health management tool called Data Repository and Visualization System (DRVS, pronounced Drives). Together these tools track performance measures in registries, plan patient visits around performance measure goals which are managed by Plan/Do/Study/Act (PDSA) cycles at the clinic. The Community Health Center – Pharmacist Integration project has been integrated into the Chronic Disease Collaborative. New in 1817 strategies DRVS will be utilized to promote early detection of Chronic Kidney Disease in people with diabetes. Diabetes performance measure goals include:

1. reducing uncontrolled A1C (>9)

2. increasing the number of people with diabetes who have controlled blood pressure (<140/90)
3. increasing the number of people with diabetes who have measured and controlled cholesterol
4. increasing the number of people with diabetes who received annual eye exams
5. increasing the number of people with diabetes who have a foot exam
6. increasing the number of people with diabetes who have a kidney screening
7. increasing the number of people who have their tobacco use assessed and then receive cessation advice
8. BMI assessment and counseling
9. asthma and cardiovascular measures around blood pressure and cholesterol control
10. colorectal screening

**e. Pharmacist Integration**

MAP's Pharmacist Integration project is based on the Asheville Project and The Ten City Diabetes Challenge which showed an evidence base and cost effectiveness in integrating the pharmacist into the health care team.

*Community Health Center – Pharmacist Integration (CHC-PI)* is a project to identify and develop processes and systems that can help pharmacists to become part of the clinical health care teams. Ten CHCs participated in the phase I pilot, some in urban and some in rural areas, some with internal pharmacies and some without, all with identified committed participants. Clinics and pharmacists that participated in this program developed methods to improve care for the most at risk and most expensive patients. In phase II, the goal is to institutionalize pharmacist integration and attention to medication adherence throughout all CHCs through reports and practices developed during the phase I pilot.

*Pharmacy Services Expansion Project* is an ongoing partnership with the Missouri Pharmacy Association (MPA) to support pharmacy sites to become certified through the American Diabetes Association (ADA) and/or American Association of Diabetes Educators (AADE) to provide Diabetes Self-Management Education and Support Services (DSMES). The current effort assists pharmacists using the STRAND online tool to assist pharmacists in the difficult DSMES application process.

*Pharmacy Technician and Pharmacy Delivery Drivers Pilot* is a project to allow pharmacy technicians and pharmacy delivery drivers to be trained as community health workers (CHW) to obtain medication histories, assist medication reconciliation, reinforce key medication educational messages, and make DSMES referrals.

**f. Patient Centered Medical Home (PCMH)**

PCMH is a way of organizing primary care that emphasizes care coordination and communication to transform primary care into "what patients want it to be." PCMH can lead to higher quality and lower costs, and can improve patients' and providers'

experience of care. MAP is supporting this practice transformation as part of the Chronic Disease Collaborative and in our work with practices on optimization of EHRs. DHSS is also partnering with MHD by encouraging practices in practice transformation efforts to a PCMH model, an established requirement of the MHD PCHH program.

**g. Community Health Workers**

The CHW is a pilot project being implemented in the Kansas City, St. Louis, Springfield, and Bootheel areas. Through the Kansas City Metro Community College, St. Louis Community College, Ozarks Technical College, Southeast Missouri State University, and State Fair Community College, individuals are attending a CHW Certificate Program. As of August 2018, 454 individuals have completed the curriculum. Once they receive their certificate, the individuals are placed in health care settings, local public health agencies, or community organizations to assist medical professionals with improving health outcomes for individuals. They accomplish this through the provision of services such as working with individuals to identify barriers that prevent compliance with treatment recommendations, assist in linking community members to medical care and a range of social services, and serving as a liaison with clinical and administrative staff by providing information on cultural issues impacting health. Southeast Missouri State University provides the Certificate Program through satellite sites in New Madrid, Malden, Kennett, and Poplar Bluff, if individuals enrolled are from those areas.

As CHWs complete the curriculum, there is a need for continuing education.

Collaboratively with the Missouri Telehealth Network, a CHW ECHO (Extension of Community Healthcare Outcomes), a virtual learning network, was created. The CHW ECHO sessions are held the first and third Tuesday of the month for one hour. A panel of experts, comprised of a facilitator, community college instructor, behavioral health/CHW supervisor, nurse manager, community resource staff, health literacy staff, and a CHW are on each CHW ECHO. During each session, a short lecture is given, followed by a presentation of a difficult case. Attendees share information on resources that may be relevant to the case.

The Regional Kansas City CHW Collaborative, which includes Kansas City Metro Community College, health care providers, community organizations, as well as local, state and federal government, meets monthly to obtain feedback from individuals on the CHW project. Four subcommittees, Executive, Advocacy, Capacity and Sustainability, were developed to facilitate work of the Collaborative. To avoid duplication of effort, MAP staff members participate in the monthly Collaborative meetings, as well as the Executive and Capacity Subcommittees. Lessons learned will improve the process for developing a statewide program.

Integrated Health Network has taken the lead for facilitating a CHW Collaborative within the St. Louis region. Meetings are held bi-monthly, with participation from local public health agencies, community health centers, hospitals, higher educational institutions, housing developments, community organizations, and statewide organizations. On behalf of the Collaborative, Integrated Health Network wrote and received funding from a Foundation to implement a work plan to further integrate CHWs into the St. Louis region.

To avoid duplication of effort, MAP staff members participate in the bi-monthly Collaborative meetings.

A Statewide CHW Advisory Committee was established to provide recommendations to the Department on CHW infrastructure needs. Membership includes state and local agencies, higher educational institutions, health care systems, statewide organizations, and CHWs. The Advisory Committee has approved Core Competencies, Objectives and Code of Ethics recommendations. Moving forward, regional groups will be formed to ensure local input is obtained. Members of the Statewide CHW Advisory Committee will convene regional meetings to share information from the Statewide CHW Advisory Committee meetings and obtain input on issues. Information from the regional groups will be shared at Statewide CHW Advisory Committee meetings.

A memorandum of understanding will outline roles for the Missouri Credentialing Board and DHSS for a CHW certification process. Input on establishing the process was vetted through multiple Statewide CHW Advisory Committee Meetings. One member of the Statewide CHW Advisory Committee will be a member of the Missouri Credentialing Board's Advisory Body.

The Missouri Public Health Association (MPHA) is restructuring, allowing for involvement of CHWs. A letter of agreement will outline MPHA and DHSS role in the development of the association. Development of the association will increase networking opportunities for CHWs.

Columbia/Boone County Public Health and Human Services created a Live Well By Faith program utilizing CHWs to decrease the number of health disparities among African-Americans due to high blood pressure and diabetes. The program is designed to help churches support the adoption of healthy behaviors among members. Twenty churches have identified 43 individuals who will be trained CHWs.

A Health in All Policies project through the Aspen Institute was developed to include CHWs in Senior Centers in Kansas City, St. Louis, Rolla, and the Bootheel. The CHWs will provide resources and encouragement to individuals with prediabetes or diabetes to improve health outcomes. Work plans were developed based on needs assessments that were conducted.

A CHW Conference was held in April 2018 to highlight CHW activities, share resources and network. Attendance of 250 individuals included CHWs, employers, potential employers, and payers. In addition 30 exhibitors were available to share resources and information. The Gateway Region YMCA presented on their National DPP, in addition to being an exhibitor. Funding for the conference was through the Missouri Foundation for Health and Health Forward Foundation.

#### **h. Diabetes in Schools**

Diabetes (type 1 or type 2) affects about 208,000 people (0.25%) of everyone younger than 20 years in the United States. In Missouri, school nurses report 2,842 students with diabetes (type 1 or type 2). This is 0.3% of the student population and is higher than the



national rate.<sup>7</sup> The School Health Program focuses on professional development for school nurses and school staff to ensure that students with diabetes have the resources and support needed in school to manage their chronic health condition. According to the literature, managing diabetes at school is most effective when there is a partnership among students, parents, school nurse, health care providers, teachers, counselors, coaches, transportation, food service employees, and administrators. Support may include helping a student take medications, check blood sugar levels, choose healthy foods in the cafeteria, or be physically active.

The School Health Program supports Missouri school nurses by:

- Sponsoring webinars on diabetes management for school nurses;
- Including professional development and resources at the annual Health Office Orientation for new staff on diabetes management in the school setting;
- Partnering with the Missouri State Board of Nursing to offer education on delegation of care in the school setting and to further explain Cades Law which includes legislative provisions affecting diabetes management in schools. A webinar (Trained Diabetes Personnel in Missouri Schools) is posted on the DHSS and DESE websites (<https://desemo.adobeconnect.com/a754202577/p4v5qm2q5xj/>);
- Developing a “Rapid E-Learning Module” (<http://ccox.sites.truman.edu/2017/03/27/diabetes-e-learning-module-for-mo-school-nurses-6/>) for school nurses to explain the updates to the Helping the Student with Diabetes Succeed: A Guide for School Personnel developed by the National Diabetes Education Program; and lastly,
- Posting CDC tools and information about diabetes on the school health website (<https://health.mo.gov/living/families/schoolhealth/disease.php>).

### **Part III: Coordination and Partnerships**

MHD actively collaborates with the DHSS, including but not limited to diabetes prevention and management. Areas of collaboration include epidemiologic and data analysis for the MHD population, MTM for diabetes, and coordination in the development of CHW and DPP program services. MHD and DHSS jointly participated in the Affinity Work Group program coordinated by CMS, with the goal of studying the practicality of and options for implementing the National DPP for MO HealthNet participants. This collaboration is at all levels, from the director to program staff at both MHD and DHSS. In addition MHD collaborates with DHSS in advancing shared clinical and public health goals through MHD patient care and population health management opportunities, including via managed care plans’ care management and disease management efforts; Health Home care coordination and management efforts; working more closely with complex patients and coordination of activities with local community-based partners and services; exchanging data related to participants’ care management and coordination; and evaluating processes for working more closely with providers and partners.

The Missouri Diabetes Council (MDC), which is a group of volunteer partners interested in working on issues around diabetes, has created a strategic plan. Workgroups from MDC have been formed around:

- Community Resource Directory
- Lifestyle/Education Interventions
- Communication and Marketing
- Transition of Care
- Train the Trainers
- Government Relations/Advocacy
- Council Structure  
(501c3 exploration)

In 2016, the Missouri Hospital Association (MHA) began a new effort to assemble a Diabetes Learning and Sharing Community that highlights activities around the state that focus on the triple aim of improving health, lowering costs and better care. This partnership engages new and additional partners to address the problem.

## **Part IV: Action Plan**

1. In order to impact diabetes and prediabetes in the MHD population, MHD proposes the following:
  - a. MHD proposes to cover evidence-based multi-component weight reduction programs supported by the United States Preventive Services Task Force and also being pursued by the Children’s Service Commission Subcommittee on Childhood Obesity. MHD has collaborated with subject matter experts, including members of the Subcommittee on Childhood Obesity, on the development of its Intensive Behavioral Therapy program for the treatment and management of obesity. MHD’s program development reached completion, and the proposed program has entered the administrative rules and State Plan Amendment process. Obesity increases the risk of diabetes and higher healthcare expenditures. The availability of this benefit is anticipated to reduce the incidence of prediabetes and mitigate the morbidity related to diabetes and diabetes-related complications.

According to the United States Preventative Services Task Force (USPSTF), “For obese patients with elevated plasma glucose levels, behavioral interventions decreased the incidence of diabetes diagnosis by about 50% over 2 to 3 years (number needed to treat, 7 (seven)). Behavioral interventions also demonstrated some improvement in intermediate health outcomes, such as blood pressure, waist circumference, and glucose tolerance”.

- b. In addition, MHD is evaluating the CDC Diabetes Prevention Program (DPP) and its potential implementation for the MO HealthNet population. MHD has worked in collaboration with DHSS during the process. The evaluation of the potential population and cost-impact has been performed. In the setting of obesity, the DPP would provide another option for the management of obesity in those who show signs of prediabetes.

According to the Centers for Disease Control and Prevention, prediabetes affects approximately 84 million people, which is one out of three adults living in the United States. Individuals with prediabetes are at a higher risk for developing type 2 diabetes.<sup>8</sup> Research led by the National Institutes of Health has shown that individuals with prediabetes that take part in CDC-recognized lifestyle change program decrease their risk of developing type 2 diabetes by 58% (71% for people over 60 years old).<sup>9</sup>



- c. Furthermore, MHD has completed its evaluation of adding community health workers (CHW) as a provider for defined high-risk populations. The results of the evaluation showed a 38% reduction in emergency department visits in individuals enrolled in PCHH that had access to a CHW as compared to an 8% reduction in individuals enrolled in a PCHH that did not have access to a CHW. The pilot also showed a 16.6% reduction in hospitalizations for individuals enrolled in a PCHH with access to a CHW as compared to a 6% decrease (16.6% decrease for individuals with a CHW compared to 6% decrease in reduction in individuals enrolled in a PCHH that did not have access to a CHW). CHW providers would provide community-based care coordination and/or education to complement clinic and hospital care coordination. They would assist individuals in the management of their diabetes and issues impacting their ability to manage their diabetes. It is anticipated that this provider will improve diabetes management and follow-up, resulting in reduced morbidity and healthcare related costs. Possible examples of their activities include:

- Facilitate appointments (including providing transportation),
- Follow up on appointments or other instructions by making home visits,
- Communicate with primary care providers about barriers to self-management noted during home visits,
- Assist in obtaining social and/or community services for participants,
- Assist with post-hospitalization or emergency department visit follow-up by attempting to track down participants primary care staff have been unable to reach, and
- Participate in primary care provider meetings when possible to help bridge the communication gap that may be present between patient and provider.

The National Community Health Advisor Study<sup>10,11</sup> includes seven basic roles for CHWs:

- Proving cultural mediation between communities and health and human services systems,
- Providing informal counseling and social support,
- Providing culturally appropriate health education,
- Advocating for individual and community needs,
- Ensuring that people obtain necessary services,
- Building individual and community capacity, and
- Providing basic screening services.

According to the CDC, “Many interventions that integrate CHW services into health care delivery systems are associated with reductions in chronic illnesses,<sup>12</sup> better medication adherence,<sup>13</sup> increased patient involvement,<sup>14</sup> improvements in overall community health,<sup>15</sup> and reduced health care costs.<sup>16,17</sup> One study of a CHW outreach program for underserved men found a return on investment ratio of more than \$2 for each dollar invested.<sup>18</sup> Another study found an annual cost savings using CHWs of around \$2,000 per Medicaid patient with diabetes.<sup>19,20</sup>”

2. DHSS’s current related work plans for their 1815 and 1817 Grants from CDC is broken into two Categories, Category A: Diabetes Management and Type 2 Diabetes Prevention Strategies and Category B: Cardiovascular Disease Prevention and Management Strategies. As can be readily seen, many activities cross-reference both categories.

CDC-RFA-DP18-1815PPHF18

Improving the Health of Americans Through Prevention and Management of Diabetes and Heart Disease and Stroke-Financed in part by 2018 Prevention and Public Health Funds (PPHF)

CATEGORY A: DIABETES MANAGEMENT AND TYPE 2 DIABETES PREVENTION STRATEGIES

***Diabetes Management: Improve care and management of people with diabetes.***

- A.1 Improve access to and participation in ADA-recognized/AADE-accredited DSMES programs in underserved areas (*Note: These programs meet national quality*)

*standards and are more likely to be sustained long-term due to reimbursement by Medicare, many private insurance plans, and some State Medicaid Agencies.)*

OPTIONAL: Applicants selecting strategy #1 may also choose to engage in efforts to increase participation in other DSMES programs that are not recognized/accredited or in chronic disease self-management programs (CDSMP). These programs/curricula must have evidence documenting their impact on people with diabetes. If selected, this work should be **secondary** to improving access to and participation in ADA-recognized/AADE-accredited DSMES programs that meet national quality standards.

- A.2 Increase engagement of pharmacists in the provision of medication management or DSMES for people with diabetes.

***Type 2 Diabetes Prevention: Improve access to, participation in, and coverage for the National Diabetes Prevention Program (National DPP) lifestyle change program for people with prediabetes, particularly in underserved areas.***

- A.3 Assist health care organizations in implementing systems to identify people with prediabetes and refer them to CDC-recognized lifestyle change programs for type 2 diabetes prevention.
- A.4 Collaborate with payers and relevant public and private sector organizations within the state to expand availability of the National DPP as a covered benefit for one or more of the following groups: Medicaid beneficiaries; state/public employees; employees of private sector organizations.
- A.5 Implement strategies to increase enrollment in CDC-recognized lifestyle change programs.

***Diabetes Management and/or Type 2 Diabetes Prevention.***

- A.6 Develop a statewide infrastructure to promote long-term sustainability/reimbursement for Community Health Workers (CHWs) as a means to establish or expand their use in a) CDC recognized lifestyle change programs for type 2 diabetes prevention and/or b) ADA recognized/AADE-accredited DSMES programs for diabetes management.

## CATEGORY B: CARDIOVASCULAR DISEASE PREVENTION AND MANAGEMENT STRATEGIES

***Track and Monitor Clinical Measures shown to improve healthcare quality and identify patients with hypertension.***

- B.1 Promote the adoption of evidence-based quality measurement at the provider level (e.g., use dashboard measures to monitor healthcare disparities and implement activities to eliminate healthcare disparities).

***Implement Team-Based Care for patients with high blood pressure and high blood cholesterol.***

- B.2 Support engagement of non-physician team members (e.g., nurses, nurse practitioners, pharmacists, nutritionists, physical therapists, social workers) in hypertension and cholesterol management in clinical settings.

***Link Community Resources and Clinical Services that support systematic referrals, self-management, and lifestyle change for patients with high blood pressure and high blood cholesterol.***

- B.3 Develop a statewide infrastructure to promote sustainability for CHWs to promote management of hypertension and high blood cholesterol.
- B.4 Facilitate use of self-measured blood pressure monitoring (SMBP) with clinical support among adults with hypertension.
- B.5 Implement systems to facilitate systematic referral of adults with hypertension and/or high blood cholesterol to community programs/resources.

CDC-RFA-DP18-1817

Diabetes and Heart Disease & Stroke Prevent Programs-Innovative State and Local Public Health Strategies to Prevent and Manage Diabetes and Heart Disease and Stroke

CATEGORY A: DIABETES MANAGEMENT AND TYPE 2 DIABETES PREVENTION STRATEGIES

***Type 2 Diabetes Prevention: Improve access to and participation and retention in the National Diabetes Prevention Program (National DPP) lifestyle change program for people with prediabetes.***

- A.1. Implement systems to facilitate bi-directional e-referral between healthcare systems and CDC-recognized lifestyle change programs for type 2 diabetes prevention.
- A.2. Support organizations in increasing enrollment in existing CDC-recognized lifestyle change programs or establishing and sustaining new CDC recognized lifestyle change programs in underserved areas.
- A.3. Implement tailored communication/messaging to reach underserved populations at greatest risk for type 2 diabetes to increase awareness of prediabetes and the National DPP.
- A.4. Support advanced training for lifestyle coaches working at CDC-recognized lifestyle change programs to strengthen skills needed to engage and retain participants.

***Diabetes Management and/or Type 2 Diabetes Prevention.***

- A.5. Explore and test innovative ways to eliminate barriers to participation and retention in CDC-recognized lifestyle change programs for type 2 diabetes prevention and/or ADA-recognized/AADE-accredited diabetes self-management education and support (DSMES\*) programs for diabetes management among high burden populations.
- A.6. Work with health care systems to establish or expand use of telehealth technology to increase access to one or more of the following programs/services in underserved areas:
  - 1. ADA-recognized/AADE-accredited DSMES\* programs for diabetes management
  - 2. CDC-recognized lifestyle change programs for type 2 diabetes prevention

3. Diabetic retinopathy screening (using a non-mydriatic retinal camera at the screening site connected to a central reading center through telemedicine).

***Diabetes Management: Improve care and management of people with diabetes.***

- A.7. Increase adoption and use of clinical systems and care practices to improve health outcomes for people with diabetes (e.g., HIT/EHRs, clinical decision support tools, learning collaboratives to improve quality of care).
- A.8. Increase use of clinical decision support within the EHR to promote early detection of chronic kidney disease (CKD) in people with diabetes.

*\*These programs meet national quality standards and are more likely to be sustained long-term due to reimbursement by Medicare, many private insurance plans, and some State Medicaid Agencies.*

**CATEGORY B: CARDIOVASCULAR DISEASE PREVENTION AND MANAGEMENT STRATEGIES**

***Track and Monitor Clinical Measures shown to improve healthcare quality and identify patients with high blood pressure and high blood cholesterol.***

- B.1. Increase identification of patients with undiagnosed hypertension using EHRs/HIT.
- B.2. Explore and test innovative ways to promote the adoption of evidence-based quality measurement at the provider level (e.g., use dashboard measures to monitor health outcomes among high burden subpopulations and implement related activities).

***Implement Team-Based Care for patients with high blood pressure and high blood cholesterol.***

- B.3. Explore and test innovative ways to engage non-physician team members (e.g., nurses, nurse practitioners, pharmacists, nutritionists, physical therapists, social workers) in hypertension and cholesterol management in clinical settings.
- B.4. Promote the adoption of MTM between community pharmacists and physicians for the purpose of managing high blood pressure, high blood cholesterol, and lifestyle modification.

***Link Community Resources and Clinical Services that support bi-directional referrals, self-management, and lifestyle change for patients with high blood pressure, high blood cholesterol, and/or who have had a cardiac event.***

- B.5. Facilitate engagement of patient navigators/community health workers in hypertension and cholesterol management in clinical and community settings.
- B.6. Implement systems to facilitate bi-directional referral between community programs/resources and healthcare systems (e.g. using EHRs, 800 numbers, 211 referral systems, etc.).
- B.7. Explore and test innovative ways to expand use of telehealth including mobile health technology (e.g., smart apps, text messages) to promote management of hypertension and high blood cholesterol.

- B.8. Explore and test innovative ways to enhance referral, participation, and adherence in cardiac rehabilitation programs in traditional and community settings, including home-based settings.

## Part V: Budget Blueprint

In order to implement the proposed strategies, MHD and DHSS would anticipate pursuit of the following policy changes and budget considerations:

### 1. Evidence-based multi-component weight reduction programs

“Projections for Missouri find that if the current trend in childhood obesity continues, Missouri will spend \$12 billion annually on obesity-related healthcare costs by 2030.”<sup>21</sup> “States should have interest in obesity treatment modalities, as each obese Medicaid beneficiary costs, on average, \$1,021 more per year than normal weight beneficiaries.”<sup>22</sup> MHD has completed a cost-impact analysis of the provision of these services to a defined population by a defined set of providers that would meet MHD established requirements. The cost-impact analysis showed that there is potential for savings within the first six months of services and the savings continue to increase past the first six months. Based on this analysis, MHD moved forward with the development of the program and entered the regulation in the administrative rules making process and drafted the State Plan Amendment for the review process.

MAP will support National DPPs, DSME/Ts and other evidence-based lifestyle change programs that include weight loss as a goal. With more third-party payers like United Healthcare Group, Anthem, Blue Cross and Blue Shield of Kansas City and Medicare covering the National DPP and new studies like the “Certification of Medicare Diabetes Prevention Program” by Office of the Actuary of CMS that shows the program works better, spends dollars smarter, and keeps people healthy, the program will grow quickly.<sup>23</sup> DHSS will encourage the Missouri Consolidated Health Care Plan and others to provide coverage for their insured populations. Currently evidence has shown DPPs to be cost effective choices<sup>24</sup> with more evidence building all the time.

### 2. Diabetes Prevention Program

National research shows that approximately one in three adults living in the United States has prediabetes, which places these individuals at higher risk for developing type 2 diabetes, heart disease, and stroke. In 2017, it was estimated that the total estimated cost of diagnosed diabetes was \$327 billion, with \$327 billion being direct medical costs. The research also shows that medical expenses for individuals diagnosed with diabetes are estimated to be about 2.3 times higher than for individuals without diabetes, which shows that approximately “one in four health care dollars is spent on people diagnosed with diabetes.”<sup>25</sup>

MHD has completed a cost-impact analysis of the provision of DPP services to a defined population by a defined set of providers that would meet CDC established requirements. The cost-impact analysis showed a potential for savings noted within the first year and subsequent years would offset the cost of the services. In addition, information provided by the CMS Office of the Actuary certifies that an expansion of a DPP in Medicare

would not result in an increase in spending.<sup>26</sup> Based on this analysis, MHD has moved forward in developing the framework for the program and has entered the administrative rules making and State Plan Amendment process.

### **3. Addition of Community Health Workers (CHWs) as Providers**

Regarding future planning for CHWs, with the addition of CHWs to MHD programs such as the Primary Care Health Home Program for a defined high risk population, MHD would need to activate certain Current Procedural Terminology (CPT) codes through which these services would be billed. The budget impact to MHD would come from the activation of these CPT codes and would require additional appropriation authority. However based on the MHD CHW pilot findings, it can be estimated that annual cost savings for individuals participating in the MHD CHW program will be ~\$1,476, and the cost savings can be realized within six months after a participant begins the program. Once a framework is complete, the proposal would need to navigate the budget process, administrative rules making, and State Plan Amendment process.

In addition to activating the CPT codes, a standard training and certification process would need to be developed as well as additional workforce development. MHD will need to define eligible participant populations, eligible provider credentials, which practices can add them, and fully evaluate the cost model. In order to do so, MHD has partnered with DHSS in its efforts to define a statewide curriculum and certification process for CHWs.

The approach of MAP to this issue will be to support CHW and work to establish policies to get reimbursement for their work covered by third-party payers<sup>27</sup>. MAP will convene key stakeholders to ensure knowledge of how CHWs improve health outcomes and may aid with health care cost savings through assisting individuals with the management of chronic health conditions. An opportunity exists through the MAP grant to assist approximately 100 CHWs to receive the appropriate training through educational institutions offering the approved curriculum by funding a scholarship program through 2019. For sustainability, community colleges are beginning to look at other scholarships and funding opportunities to cover training costs.



## ENDNOTES

- <sup>1</sup> Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. Available at: <http://apps.nccd.cdc.gov/brfss/display.asp?cat=CH&yr=2013&qkey=8151&state=UB>.
- <sup>2</sup> Centers for Disease Control and Prevention. Prevalence of Total, Diagnosed, and Undiagnosed Diabetes Among Adults: United States, 2013 – 2016. Available at <https://www.cdc.gov/nchs/products/databriefs/db319.htm>
- <sup>3</sup> American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2017. Available at: <http://care.diabetesjournals.org/content/early/2018/03/20/dci18-0007> for methodology, and <http://care.diabetesjournals.org/content/41/5/917.supplemental> for state data.
- <sup>4</sup> National Center for Health Statistics, FastStats, Obesity and Overweight <http://www.cdc.gov/nchs/fastats/obesity-overweight.htm>
- <sup>5</sup> Stratton, et al. *BMJ* 2000; Hennekens CH. *Circulation* 1998;97:1095-1102; Rich-Edwards JW, et al. *N Engl J Med* 1995;332:1758-1766; Bassuk SS, Manson JE. *J Appl Physiol* 2005; 99: 1193-1204
- <sup>6</sup> Definition used with permission of Center for Health Care Strategies, Inc., Princeton, New Jersey, “Case Management in Managed Care for People with Developmental Disabilities: Models, Costs and Outcomes, January, 1999”
- <sup>7</sup> School Health Online Reporting Service 2017
- <sup>8</sup> Centers for Disease Control and Prevention. About Prediabetes & Type 2 Diabetes. Available at: <https://www.cdc.gov/diabetes/prevention/prediabetes-type2/index.html>
- <sup>9</sup> Centers for Disease Control and Prevention. Research-Based Prevention Program. Available at: <https://www.cdc.gov/diabetes/prevention/prediabetes-type2/preventing.html>
- <sup>10</sup> Community Health Workers: Expanding the Scope of the Health Care Delivery System. Kristine Goodwin and Laura Tobler, 2008
- <sup>11</sup> Rosenthal et al., The Final Report of the National Community Health Advisor Study: Weaving the Future (Tucson: University of Arizona, 1998)
- <sup>12</sup> Sjöström, C. D., Lissner, L., Wedel, H. and Sjöström, L. (1999), Reduction in Incidence of Diabetes, Hypertension and Lipid Disturbances after Intentional Weight Loss Induced by Bariatric Surgery: the SOS Intervention Study. *Obesity Research*, 7: 477–484. doi: 10.1002/j.1550-8528.1999.tb00436.x
- <sup>13</sup> Sjöström, C. D., Lissner, L., Wedel, H. and Sjöström, L. (1999), Reduction in Incidence of Diabetes, Hypertension and Lipid Disturbances after Intentional Weight Loss Induced by Bariatric Surgery: the SOS Intervention Study. *Obesity Research*, 7: 477–484. doi: 10.1002/j.1550-8528.1999.tb00436.x
- <sup>14</sup> Buchwald, H. MD, PhD; Avidor, Y. MD; Braunwald, E. MD, et al. (2004) Bariatric Surgery: A Systematic Review and Meta-analysis. *JAMA*. 2004; 292(14):1724-1737. doi:10.1001/jama.292.14.1724
- <sup>15</sup> Community Health Workers: Expanding the Scope of the Health Care Delivery System. Kristine Goodwin and Laura Tobler, 2008
- <sup>16</sup> Robert Wood Johnson Foundation. Bending the Obesity Cost Curve in Missouri. Washington, DC: Trust for America’s Health, 2012.
- <sup>17</sup> Finkelstein EA, Trogon JG, Cohen JW, DietzW. Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Affairs*. September/October 2009;28(5):w822-w831. doi: 10.1377/hlthaff.28.5.w822.
- <sup>18</sup> Robert Wood Johnson Foundation. Bending the Obesity Cost Curve in Missouri. Washington, DC: Trust for America’s Health, 2012.
- <sup>19</sup> Finkelstein EA, Trogon JG, Cohen JW, DietzW. Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Affairs*. September/October 2009;28(5):w822-w831. doi: 10.1377/hlthaff.28.5.w822.
- <sup>20</sup> National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention, A Summary of State Community Health Worker Laws [http://www.cdc.gov/dhdsp/pubs/docs/chw\\_state\\_laws.pdf](http://www.cdc.gov/dhdsp/pubs/docs/chw_state_laws.pdf)
- <sup>21</sup> Robert Wood Johnson Foundation. Bending the Obesity Cost Curve in Missouri. Washington, DC: Trust for America’s Health, 2012.
- <sup>22</sup> Finkelstein EA, Trogon JG, Cohen JW, DietzW. Annual medical spending attributable to obesity: Payer-and service-specific estimates. *Health Affairs*. September/October 2009;28(5):w822-w831. doi: 10.1377/hlthaff.28.5.w822
- <sup>23</sup> Certification of Medicare Diabetes Prevention Program. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/Diabetes-Prevention-Certification-2016-03-14.pdf>
- <sup>24</sup> The Diabetes Prevention Program (Dpp) Research Group. The Diabetes Prevention Program (DPP)-Description of Lifestyle Intervention. doi: 10.2337/diacare.25.12.2165 *Diabetes Care* December 2002 vol. 25 no. 12 2165-2171
- <sup>25</sup> Centers for Disease Control and Prevention. About Prediabetes & Type 2 Diabetes. Available at: <https://www.cdc.gov/diabetes/prevention/prediabetes-type2/index.html>
- <sup>26</sup> Certification of Medicare Diabetes Prevention Program. Paul Spitalnic, ASA, MAAA Chief Actuary, Centers for Medicare & Medicaid Services, 2016. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ActuarialStudies/Downloads/Diabetes-Prevention-Certification-2016-03-14.pdf>
- <sup>27</sup> Community Health Workers: Expanding the Scope of the Health Care Delivery System. Kristine Goodwin and Laura Tobler, 2008