



# Tennessee Diabetes Action Report

February 2017

This report was compiled by the Tennessee Department of Health, Bureau of TennCare and the Department of Finance and Administration in accordance with Tennessee Code Annotated 68-1-2601, 68-1-2602, and 68-1-2603.

## Table of Contents

Purpose and Overview .....	4
Recommendations .....	5
Background .....	7
Burden and Magnitude.....	8
Diabetes and Prediabetes Prevalence .....	9
Diabetes Incidence .....	10
Risk Factors & Complications .....	11
Preventive Care Practices .....	13
Diabetes and Pregnancy .....	13
Morbidity and Mortality .....	14
Diabetes and Health Care Quality.....	15
Financial Burden of Diabetes .....	15
Sum of Costs.....	15
TennCare.....	15
State Group Insurance Program .....	16
Services and Programs Addressing Diabetes in Tennessee .....	17
What is Policy, System and Environmental Change? .....	18
Why is Policy, System and Environmental Change Important?.....	18
Statewide Prevention Initiatives.....	18
Project Diabetes .....	19
Preventive Health and Health Services Block Grant .....	20
Women, Infants, and Children Program .....	20
Maternal and Child Health Funding .....	21
State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (CDC 1305 Grant) .....	21
Environmental Approaches to Promote Health.....	22
Tennessee Department of Finance and Administration .....	23
Wellness Program .....	23

Employee Clinic DPP.....24

Bureau of TennCare.....24

Cross-Collaboration and Coordination between Agencies.....25

    Working for a Healthier Tennessee Initiative .....25

    Healthier Tennessee .....25

    State Innovation Model (SIM)/Episodes of Care Initiative .....26

    Patient-Centered Medical Home (PCMH) Initiatives .....26

Recommended Actions.....26

# Purpose and Overview

In July 2015, the Tennessee General Assembly directed the Bureau of TennCare, the Department of Health (TDH), and the Department of Finance and Administration to jointly submit a report to the Health Committee of the House of Representatives and the Health and Welfare Committee of the Senate by February 1 of each odd-numbered year. This report is to contain a description of the financial impact and reach of diabetes of all types in the state, an assessment of the benefits of implemented programs and activities aimed at controlling diabetes and preventing the disease, a description of the level of coordination existing between the agencies, and an action plan for battling diabetes. Likewise, the Tennessee General Assembly directed the agencies to collaborate to identify goals and key performance indicators while also developing individual agency plans to reduce the incidence of diabetes, improve diabetes care, and reduce negative health outcomes associated with diabetes in Tennessee.

The state of Tennessee is diligently working toward a culture of health through statewide, regional, county, community and individual initiatives. These efforts include a focus on strategies around increasing physical activity, access to healthy nutrition and clean potable water, decreasing tobacco use and exposure, and increased and consistent access to quality preventive and clinical care.

The data for this report were compiled from state and national sources, including the Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS), National Health Interview Survey (NHIS), Tennessee Vital Statistics Systems, Pregnancy Risk Assessment System (PRAMS), Healthcare Effectiveness Data and Information Set (HEDIS) and HRSA Health Center Program Grantee Data. Also, the Bureau of TennCare and the Department of Finance and Administration provided data on Tennessee's Medicaid program and state group insurance program populations, respectively. The report also references data collected from a literature review and publicly available resources. In addition, the three authoring agencies invited stakeholders to participate in a community meeting that was held in September 2016 to discuss potential content, strategy recommendations and actions to be included in this report. Stakeholders representing a variety of organizations attended, including health care providers and representatives of pharmaceutical companies, public health departments, TennCare and industry.

The final report reflects work by all three authoring agencies, as guided by the stakeholder input. This initial report in response to the Tennessee General Assembly is an overview of the

state of diabetes in Tennessee and the work specific to diabetes in each of the three agencies. The authors are grateful for ongoing work and partnerships of other state agencies, individuals, community organizations, industry, health systems, providers, and academic institutions in their significant contributions to preventing and mitigating the impact of this disease. This report is not intended to catalogue those many efforts, nor is it intended to provide clinical guidelines. The ongoing planning process for each future report will be embedded into the Tennessee Department of Health (TDH) Division of Family Health and Wellness, Chronic Disease Prevention and Health Promotion Section's work in collaboration with the two aforementioned agencies.

## ***Recommendations***

### **The following are recommended actionable items for consideration by the General Assembly of Tennessee:**

1. Increase access to healthy food and beverage options where people work, learn, live, play, and worship with an emphasis on nudging children towards healthier choices so the likelihood of developing diabetes can be reduced.
2. Increase access to safe and affordable active living by: developing opportunities to pursue interventions targeting the built environment; pursuing policies that reduce barriers to physical activity with a particular focus on children (i.e. school-based run clubs, transportation policies to increase space for recreational activity); and engaging in multi-faceted approaches to encourage walking and cycling to school, healthier commuting and physically active leisure activities.
3. Increase stakeholder involvement in policy, system and environmental (PSE) change strategies that pertain to diabetes (i.e. continue to support Project Diabetes and other state Health Promotion strategies).
4. Support investment in analytics, interoperability and measurement opportunities particularly related to population health and chronic disease prevention and treatment long-term strategies.
5. Develop a statewide Health in All Policies approach to funding and infrastructure to ensure that an in-depth consideration of the health impacts are considered in all policy development and implementation.
6. Evaluate public and private insurance payment models to determine effectiveness in cost-savings and clinical quality improvement for diabetes prevention and management.
7. Ensure all populations at high-risk for diabetes have access to Diabetes Prevention Programs.

8. Ensure all people with diabetes have access to self-management education from a Diabetes Education Program (Diabetes Self-Management and Chronic Disease Self-Management Education programs).

## **Background**

Chronic diseases, including diabetes, are largely preventable. However, the solutions are not simple, easy or quick. Diabetes and other chronic disease conditions are enabled by the places, spaces, and relationships that shape individual, family and community-level choices and that can challenge health on a daily basis. Underlying the chronic disease crisis are several critical components that are referred to by the TDH as the "Big Four." The Big Four include physical inactivity, excessive caloric intake, tobacco and nicotine addiction and substance misuse, particularly opioid abuse. Taken together, these drive the leading causes of death in Tennessee and across the nation. Years of life, quality of life and productivity are being lost at the individual and community levels. The approaches outlined in this report build off of the State Health Plan, available at <http://tennessee.gov/health/article/state-health-plan>.

*The "Big 4" driving the leading causes of death in Tennessee: physical inactivity, excessive caloric intake, tobacco and nicotine addiction and substance misuse.*

Historically, the medical care model has primarily focused on the individual with an emphasis on diagnosis, treatment and patient care. The public health model primarily focuses on populations, emphasizing prevention and health promotion for the whole community. Health, as defined by World Health Organization (WHO), is a "state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." A key goal of public health is to "promote physical and mental health, and prevent disease, injury, and disability." The population health model focuses on reducing the need for medical treatment by encouraging proactive, health-oriented decision-making at all levels and within all systems from business, schools and health to government.

Establishing the focus and importance of primary prevention and early intervention is a priority of TDH. The Primary Prevention Initiative was launched in 2012 throughout the state and has

### ***The Vision: Move Tennessee into the top ten healthy states in the nation***

partnered with established and evolving chronic disease prevention programs to promote use of upstream strategies, including Policy, System and Environmental changes (PSE), addressing social determinants of health and "Health in all Policy" (HiAP) efforts when planning programmatic strategies. In recent years, the Department has made it a priority to align program work plans across funding streams. This includes federal and state dollars

encompassing: Preventive Health; Chronic Disease Prevention; Maternal and Child Health; and Women, Infants and Children (WIC). The goal has been to increase the use of evidence-based public health strategies while focusing limited resources on upstream approaches aimed at increasing program reach, immediate impact and influencing long-term outcomes to reduce chronic disease prevalence.

**Goals:**

*TDH: Protect, promote and improve the health and prosperity of people in Tennessee.*

*TennCare: Improve lives through high-quality, cost-effective care with the vision for a Healthier Tennessee.*

*Finance and Administration: Deliver comprehensive, affordable, dependable and sustainable benefits with a vision to have healthy members and peace of mind.*

**Burden and Magnitude**

Diabetes is a disease of metabolic dysregulation in which blood glucose levels are chronically higher than normal. There are several types of diabetes. **Table 1** shows the types of diabetes and the national prevalence. Associated risks include heart disease, kidney disease, blindness, leg ulcers, damaged nerves, amputations, coma, stroke, other serious medical conditions, and even death.

**Table 1: Types of Diabetes and Estimated National Prevalence**

Type	Clinical Description	Prevalence
<b>Type 1 diabetes</b>	insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes	About 5% of all diagnosed cases of diabetes
<b>Type 2 diabetes</b>	non-insulin dependent diabetes mellitus (NIDDM)	About 90% to 95% of all diagnosed cases of diabetes
<b>Gestational diabetes</b>	affects only pregnant women and, if not treated, can increase short- and long-term health risks for mother and child	2% to 10% of all pregnancies
<b>Other specific types of diabetes</b>	resulting from specific genetic syndromes, surgery, drugs, malnutrition, infections, and other illnesses	Accounts for 1% to 5% of all diagnosed cases of diabetes

Source: CDC National Diabetes Fact Sheet, 2011



## Diabetes and Prediabetes Prevalence

According to the 2014 National Diabetes Statistics Report, nearly 30 million people, or 9.3% of the U.S. population, have diabetes and another 86 million are living with prediabetes. Prediabetes is a chronic condition of mildly elevated blood sugar that puts individuals at high risk for developing diabetes in the future. Many who have prediabetes are unaware of the presence of the condition. In Tennessee, 12.7%, or more than 650,000 adults, have been diagnosed with diabetes. Additionally, it is estimated that another 250,000 Tennesseans are living with undiagnosed diabetes.

Tennessee ranks 48<sup>th</sup> in diabetes prevalence according to the 2015 America's Health Ranking's Annual Report.

**Table 2** describes the prevalence of diabetes and prediabetes by various demographic groups: sex, race/ethnicity, age, education and income. This data comes from the 2015 Behavioral Risk Factor Surveillance Survey, an annual survey of Tennessee adults that provides information regarding health-related risk behaviors, chronic health conditions and use of preventive services.

In 2015, there was no discernible difference between diabetes prevalence among males and females. However, past years' data suggest males are more likely to be diagnosed with diabetes. Black Tennessee adults are at the greatest risk of having diabetes (17.3%) among race/ethnicity groups. Diabetes prevalence also progresses with age; older Tennesseans are significantly more likely to have diabetes compared to younger age groups. Socioeconomic factors (education and income) have a substantial role in risk of developing diabetes, as is evident throughout years of BRFSS data. In 2015, adults with less than a high school education (no diploma or G.E.D.) are more than twice as likely to have diabetes as those with a college degree. Furthermore, Tennessee adults

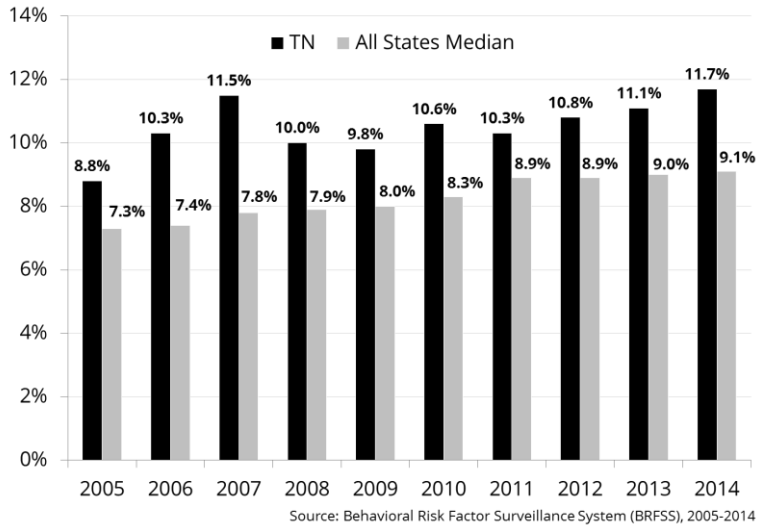
**Table 2: Prevalence of Diabetes and Prediabetes by Demographic Group**

Demographic Group	Diabetes Prevalence (%)	Prediabetes Prevalence (%)
<b>Total</b>	<b>12.7</b>	<b>9.3</b>
<b>Sex</b>		
Male	12.6	7.6
Female	12.7	10.9
<b>Race/Ethnicity</b>		
White/Non-Hisp.	12.4	9.2
Black or Afri. Am./Non-Hisp.	17.3	9.1
Other Race/Non-Hisp.	7.6	15.5
Multi-Racial/Non-Hisp.	7.9	11.9
Hispanic	1.9	4.2
<b>Age</b>		
18-24	1.5	2.6
25-34	2.8	5.0
35-44	8.3	5.8
45-54	14.7	10.4
55-64	19.7	14.8
65+	23.5	13.5
<b>Education</b>		
Less than H.S.	19.0	13.1
H.S. or G.E.D.	12.6	8.4
Some Post-H.S.	12.6	10.4
College Graduate	8.4	7.0
<b>Income</b>		
Less than \$15,000	19.7	13.3
\$15,000-24,999	16.6	9.2
\$25,000-34,999	11.7	12.6
\$35,000-49,999	12.0	10.4
\$50,000-74,999	12.1	8.7
\$75,000+	7.2	6.6

Source: Tennessee Behavioral Risk Factor Surveillance Survey, 2015

earning less than \$25,000 per year display more than a twofold prevalence of diabetes compared to those earning over \$75,000.

**Figure 1: Annual Estimates of Adult Diabetes Prevalence**

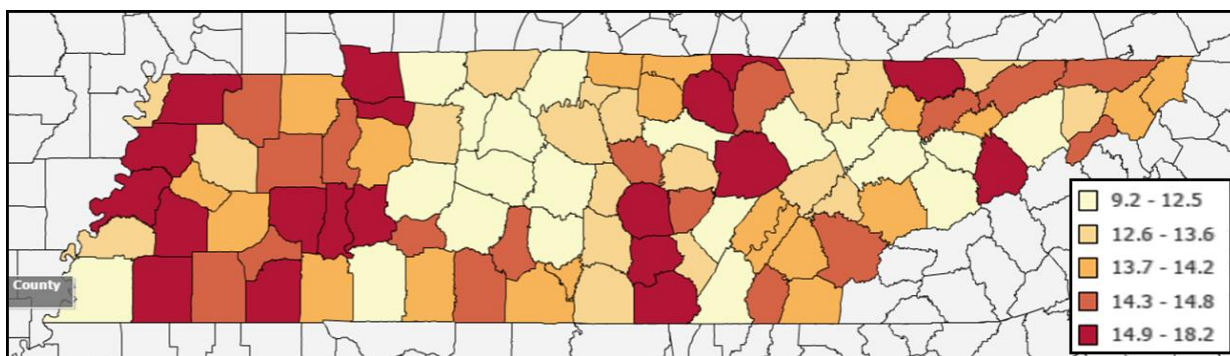


Tennessee’s overall prevalence of diabetes has risen steadily in recent years, reaching new highs in each subsequent year. Although diabetes prevalence has also increased nationally over the past decade, Tennessee’s rate is increasing slightly faster than that of the rest of the nation. **Figure 1** displays Tennessee and U.S. median prevalence rates between 2005 and 2014.

Tennessee counties vary in their prevalence of diabetes. Urban counties generally have lower rates of diabetes, followed by suburban counties. Rural counties often have the highest prevalence of diabetes. However, it should be noted that **all** of Tennessee’s 95 counties have three-year estimates higher than the national median. **Figure 2** displays a map of county-specific diabetes prevalence estimates.

*All 95 counties in Tennessee have three-year estimates higher than the national median for diabetes.*

**Figure 2: Diagnosed Diabetes Percentages, Tennessee Counties, 2012-2014**



Source: Tennessee Department of Health, Division of Family Health and Wellness

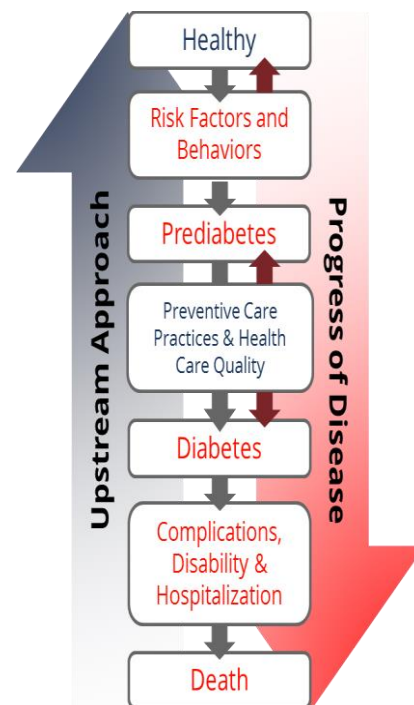
## Diabetes Incidence

Tennessee’s diabetes incidence rate, the frequency at which new cases of diabetes are identified, has declined in recent years. Approximately two-thirds of diabetes cases were diagnosed between the ages of 40 and 64 years. About 16% were diagnosed at age 18-39 years and another 21% were diagnosed at the age of 65 or older. When investigating county-specific rates of diabetes incidence, the corresponding map mimics the prevalence map in Figure 2.

## Risk Factors & Complications

Type 2 diabetes, in particular, is a progressive disease, advancing from the combination of non-modifiable and modifiable risk factors, to early signs of disease and, eventually, to diabetes and its complications. Each step adds to the severity of illness, medical interventions and cost to the patient and health care system. **Figure 3** shows how diabetes progresses into complications and death. It also shows how risk factors, health behaviors, preventive care, care management and health care quality influence downstream outcomes.

**Figure 3: Progression of Type 2 Diabetes**



**Table 3** provides a list of risk factors for type 2 diabetes. Type 2 diabetes accounts for 90-95% of all people with diabetes. Although some risk factors cannot be changed, modifiable risk factors provide significant opportunities to reduce risk of developing diabetes or the worsening of complications.

**Table 3: Risk Factors for Type 2 Diabetes**

Modifiable	Non-Modifiable	Social-Environmental
Weight Gain	Age	Educational Attainment
Overweight or Obesity	Ethnicity	Income Level
Sedentary Lifestyle	Gender	Geography
Tobacco Use	Family History	
High Blood Pressure	History of Gestational Diabetes	
High Cholesterol	Polycystic Ovarian Syndrome (PCOS)	

Source: National Institutes of Health (NIH) and Centers for Disease Control and Prevention (CDC)

Tennessee adults with diabetes are significantly more likely to be overweight or obese, be physically inactive or sedentary, use tobacco products and have been diagnosed with high blood pressure and/or high cholesterol. **Table 4** demonstrates how Tennessee compares to other states in “upstream” behaviors known to contribute to and complicate a diabetes prognosis. According to the 2014 BRFSS\*, Tennessee adults rank in the bottom quintile of states in fruit and vegetable consumption, physical inactivity, tobacco use and hypertension. Tennessee is the 36<sup>th</sup> worst state in the U.S. for obesity (adults with a BMI of 30 or higher).

**Table 4: Modifiable Risk Factors for Type 2 Diabetes and Associated Prevalence Measures Among Tennessee Adults**

Risk Factor	BRFSS Indicator	TN	U.S. Rank	TN Adults with Diabetes
Weight Gain (Nutrition)	Average number of fruits consumed per day by adults	1.1	49 <sup>th</sup>	
	Average number of vegetables consumed per day by adults	1.7	42 <sup>nd</sup>	
Obesity	Percentage of adults with BMI of 30.0 or higher	31.2%	36 <sup>th</sup>	53.1%
Sedentary Lifestyle (Physical Inactivity)	Percentage of adults who reported no physical activity or exercise other than their regular job in the past 30 days	26.8%	42 <sup>nd</sup>	37.9%
Tobacco Use	Percentage of adults who are smokers	24.2%	47 <sup>th</sup>	35.6%
High Blood Pressure	Percentage of adults who reported being told by a health professional that they have high blood pressure	38.8%	45 <sup>th</sup>	61.1%
High Cholesterol	Percentage of adults who reported having their cholesterol checked and were told by a health professional that it was high	38.7%	30 <sup>th</sup>	64.3%

Source: Tennessee Behavioral Risk Factor Surveillance Survey (BRFSS, 2014)

\*Note: 2015 BRFSS data was unavailable for all states related to the Table 4 indicators; 2014 data was used for consistency.

The future public health concern heightens with a look at modifiable risk factors among Tennessee’s youth population (**Table 5**). According to the 2015 Youth Risk Behavior Survey (YRBS), which gathers health behavior data from high school students, Tennessee youth are more likely to be obese and use tobacco than most other participating states. Tennessee high schoolers are also less likely to consume adequate amounts of fruits and vegetables. On the other hand, Tennessee youth are outperforming many states in regards to its level of daily physical activity.

*Children who are obese are more likely to have high blood pressure and high cholesterol, which are risk factors for cardiovascular disease.*

**Table 5: Modifiable Risk Factors for Type 2 Diabetes and Associated Prevalence Measures Among Tennessee Youth**

Risk Factor	Youth Risk Behavior Survey (YRBS) Indicator	Prevalence	U.S. Rank (# Participating States)
Weight Gain (Nutrition)	Did not eat fruit or drink 100% fruit juices (during the 7 days before the survey)	9.8%	33 <sup>rd</sup> (36)
	Did not eat vegetables (during the 7 days before the survey)	9.7%	27 <sup>th</sup> (32)
Overweight or Obesity	BMI >= 95 <sup>th</sup> percentile based on sex- and age-specific CDC growth charts	18.6%	36 <sup>th</sup> (37)
Sedentary Lifestyle (Physical Inactivity)	Were not physically active at least 60 minutes per day on all 7 days (during the 7 days before the survey)	74.1%	13 <sup>th</sup> (37)
Tobacco Use	Used cigarettes, smokeless tobacco, cigars or electronic vapor products on at least 1 day during the 30 days before the survey	31.9%	20 <sup>th</sup> (33)

Source: Tennessee Youth Risk Behavior Factor Surveillance Survey (YRBS, 2015)

### Preventive Care Practices

Managing diabetes requires access to health care services, coordinated efforts by health care providers, and engaged community and family systems. Specific recommendations for people with diabetes can be found in the annual publication of the American Diabetes Association’s *Standards of Medical Care in Diabetes*. These treatments range from being physically active and eating healthy to routine health care visits and vaccinations.

Unfortunately, many Tennessee adults with diabetes do not receive the recommended care. Since 2004, Tennessee adults are less likely to visit a health professional for diabetes, including annual foot and eye exams, than the national average. They are also less likely to monitor glucose, receive an influenza vaccination or attend a diabetes self-management class.

### Diabetes and Pregnancy

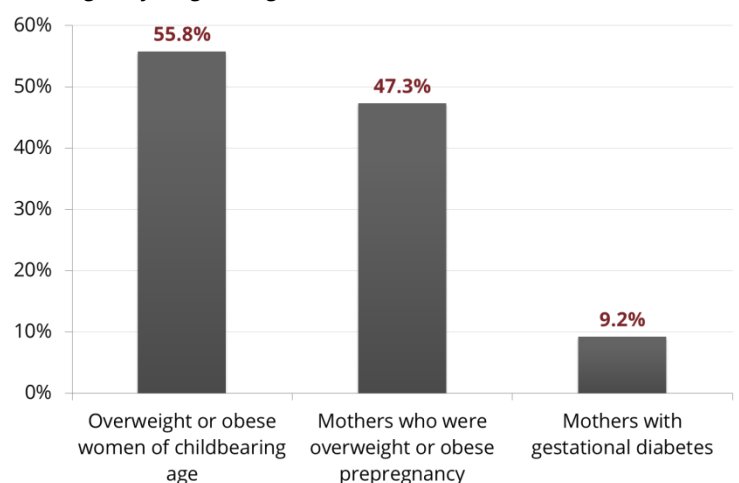
#### Pre-pregnancy Weight

Approximately 56% of Tennessee women of childbearing age are overweight or obese, and almost one-half (47.3%) of mothers were overweight or obese at the time they became pregnant (**Figure 4**). This has important implications for maternal and child health.

#### Pregnancy Weight Gain

Women whose weight gain during pregnancy is outside the recommended ranges may experience adverse maternal

**Figure 4: Characteristics of Tennessee Pregnant Mothers Pre-Pregnancy Weight, Weight Gain and Gestational Diabetes**



Source: CDC Pregnancy Risk Assessment Monitoring System (PRAMS)

outcomes, which include increased risk for developing gestational diabetes, postpartum weight retention and subsequent maternal obesity.

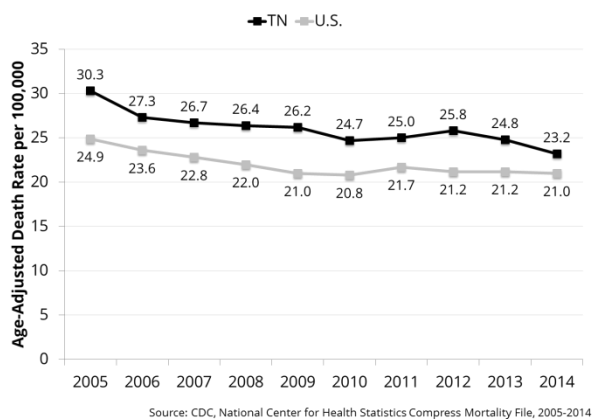
### Diabetes During Pregnancy

Gestational diabetes is a type of diabetes that first develops during pregnancy. High blood sugar during pregnancy can lead to health problems for both a pregnant woman and her baby, including the delivery of a larger infant that may result in serious birth trauma for both the mother and infant and the necessity of a cesarean section delivery. The prevalence of gestational diabetes among new mothers is 9.2%. Hispanic women are more likely than white non-Hispanics to have gestational diabetes. Affected women are also at increased risk of developing type 2 diabetes later in life. Infants born to women with diabetes and uncontrolled blood sugar during pregnancy are at higher risk for birth defects, blood sugar dysregulation at birth, and long-term risk of obesity and diabetes themselves.

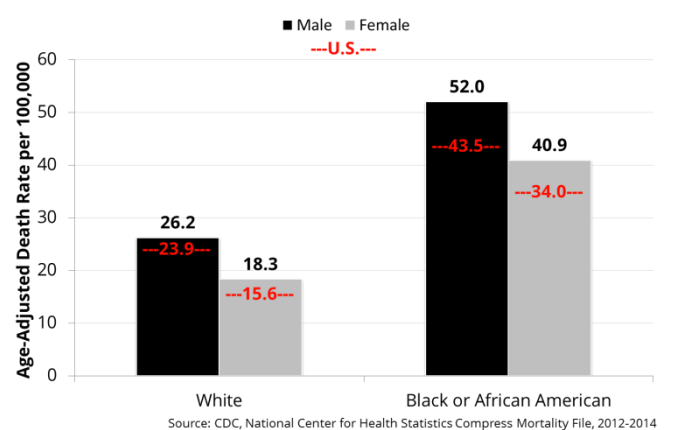
### Morbidity and Mortality

Diabetes is the 7<sup>th</sup> leading cause of death in Tennessee. The age-adjusted death rate from diabetes rose from 1990 to 2004, but since 2005, the death rate has been in a slight, but steady decline. Diabetes claims the lives of approximately 1,700 Tennesseans each year. Despite declines in the overall death rate, there continues to be significant differences in effect on Tennessee's various demographic groups. Males are more likely to die from diabetes than females, while black Tennesseans are at a substantially higher risk than whites.

**Figures 5: Diabetes Deaths, Age-Adjusted Death Rate Per 100,000**



**Figures 6: Diabetes Deaths, Age-adjusted Diabetes Deaths by Race and Gender**



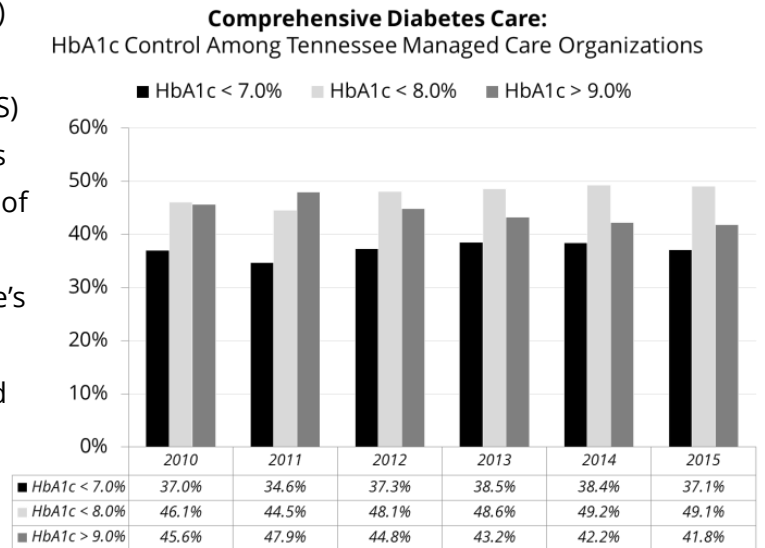
## Diabetes and Health Care Quality

### HEDIS/CAHPS Report

Medicaid managed care organizations (MCOs) are required to report Healthcare Effectiveness Data and Information Set (HEDIS) measures as a part of accreditation mandates in Tennessee. HEDIS standardized measures of MCO performance allow comparisons to national benchmarks and between Tennessee's MCOs, as well as tracking over time. Within HEDIS, there are specific measures associated with comprehensive diabetes care, including HbA1c testing and control, retinal and neuropathy exams and blood pressure control. Over the past five years, Tennessee MCOs report moderate increases in HbA1c testing and medical attention towards neuropathy and vision. HbA1c testing has increased from 70.7% in 2006 to 81.9% in 2015; the occurrence of annual retinal exams has increased from 33.0% in 2006 to 41.5% in 2015. Most notably, the percentage of patients with poor HbA1c control, HbA1c results greater than 9, was reduced from 58.9% to 41.8% over the same time period.

**Figure 7: Comprehensive Diabetes Care**

HbA1c Control Among Tennessee Managed Care Organizations



Source: 2015 Annual HEDIS/CAHPS Report

## Financial Burden of Diabetes

### Sum of Costs

According to the American Diabetes Association (ADA), average medical expenditures among people with diagnosed diabetes were 2.3 times higher than what expenditures would be in the absence of diabetes. The total costs of diagnosed diabetes in the United States in 2012 was \$245 billion. This included direct medical costs of \$176 billion and a reduction in productivity of \$69 billion. According to CDC Chronic Disease Cost Calculator cost projections, the total estimated cost of diagnosed diabetes in Tennessee in 2015 was \$5 billion.

### TennCare

TennCare provides medical coverage for Tennessee's eligible low-income residents. According to TennCare data, the total cost of diabetes-related medical claims was \$209 million in 2015. In 2014, the total cost of medical claims for diabetes was \$199 million. **Figure 8** demonstrates that the medical cost paid per recipient with diabetes in TennCare has increased over the past

two years. Furthermore, costs are increasing rapidly for members less than 21 years of age with diabetes.

Additionally, the TennCare population with prediabetes represents a significant cost risk and opportunity. Shifting this population towards greater health would significantly reduce care-related costs. However, there will be a significant increase in cost burden should the disease progress in this population.

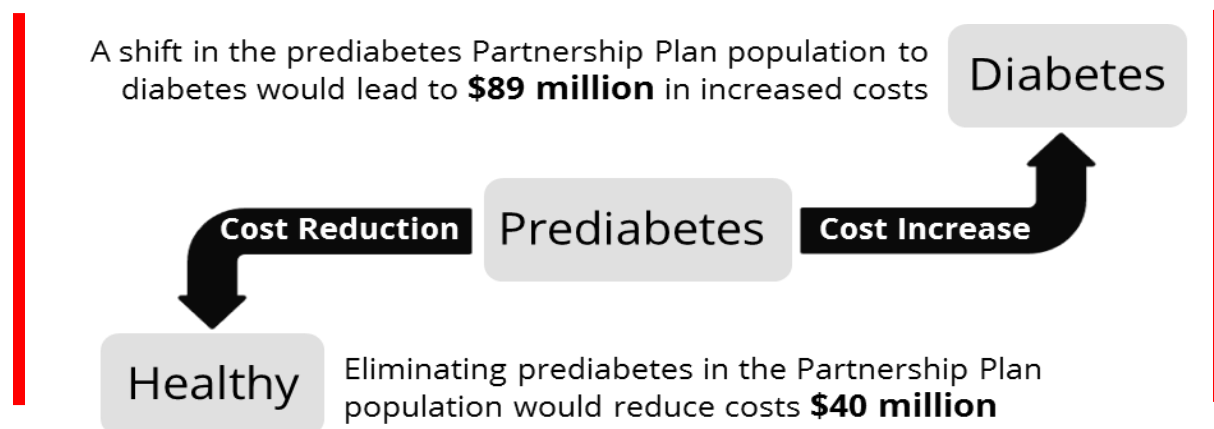
**Figure 8: Average Medical Costs of Diabetic TennCare Recipients**

Age Group	Average Costs Per Member, 2014	Average Cost Per Member, 2015	% Increase
< 21 Years	\$2,115.29	\$2,284.97	8.0%
≥ 21 Years	\$1,721.34	\$1,746.42	1.5%

Medicaid Claims Data, Bureau of TennCare

### State Group Insurance Program

The Department of Finance and Administration (F&A) manages insurance coverage for 275,000 state employees, retirees, and their dependents as well as participating local education and local government employees and their associated retirees, and their dependents. According to F&A data, the total cost of diabetes-related medical claims was nearly \$86 million in 2015.

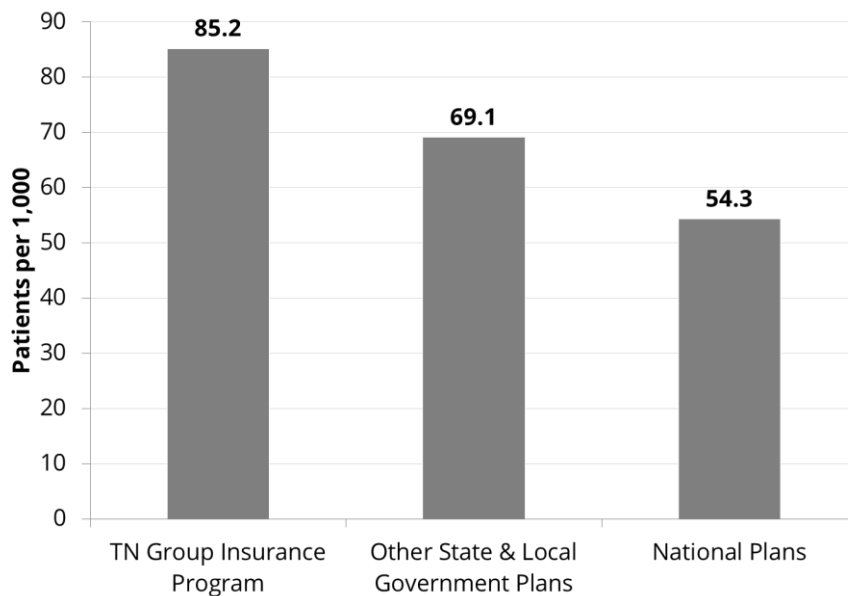


Based on biometrics (glucose) and clinical condition (primary diagnosis) data for Partnership Plan members ages 18-65, members with diabetes cost 2.4 times as much as those without diabetes. Members with prediabetes cost 1.7 times more than those without diabetes.



In 2015, Tennessee’s Group Insurance Program had a high rate of diabetes patients compared to other state and local government and national plans (**Figure 9**). Due to Tennessee Group Insurance Program’s increased burden, the plan incurs nearly \$6.6 million in increased costs compared to national plans and nearly \$3.5 million dollars compared to other state and local government plans, based on the average cost per patient.

**Figure 9: Diabetes Burden - State Plan Comparison**



*Source: Data pulled from Truven Health database on 11/16/16 for incurred calendar year 2015; specific cost and utilization measure averages for State and Local Government and National plans pulled using Truven’s Marketscan Benchmarks (based on the Truven Health Analytics’ book of business).*

The cost of regular preventive care is dwarfed by downstream costs of complications caused by diabetes. Nationally, the American Diabetes Association (ADA) estimates that people with diagnosed diabetes incur medical expenses more than twice that of those without the disease. Furthermore, the cost of care for conditions seemingly unrelated to diabetes is increased by the exacerbated effect diabetes has on the individual.

### ***Services and Programs Addressing Diabetes in Tennessee***

Many traditional health programs have focused strictly on health education, the thought being that if people know better they will choose to make better decisions independent of access barriers and/or social barriers they may face. However, in order to achieve lifestyle change, there also needs to be practical, readily available healthy options in the surrounding environment as well as a pervasive culture in which the healthy choice is the “default” normal behavior. Policy, system and environmental change strategies address these additional factors.

**|** *Healthy decisions occur when healthy options are available and routine.*

## What is Policy, System and Environmental Change?

Policy, System and Environmental (PSE) changes are strategies that modify the environment to make healthy choices practical and available to all community members, independent of individual resources. Changing laws and shaping physical landscapes (built environment) as well as changing organizational policies, systems and/or environments can make a significant impact upon large populations, while assisting communities in tackling health issues such as obesity, chronic diseases, injury, violence and substance abuse and promoting a culture change resulting in improved health, wellness and safety.

## Why is Policy, System and Environmental Change Important?

Where someone lives directly impacts how they live. Healthy decisions are more likely to be made in an environment where healthy options are consistently available. How someone lives significantly impacts their physical, mental and spiritual health and wellbeing. Policy, system and environmental changes make healthier choices a real, feasible option for every community member by looking at the laws, rules and environments that impact behavior, directly and indirectly.

Figure 10: Policy, System and Environmental Change

Setting	Traditional Programs/Events	Policy, System, and Environmental Change (PSE)
School	Celebrate national nutrition month	Use Smarter Lunchroom design and healthy food placement techniques
Community	Host a community fun run to raise awareness about diabetes	Add sidewalks, cross-walks, bike lanes, and bike racks to make walking and biking safer and more enjoyable
Worksite	Hold health screenings for staff	On-site fitness facilities and workplace policies that promote walking breaks
Hospital	Hold free breastfeeding courses for new moms	Implement the World Health Organization 10 Steps to Successful Breastfeeding and promote a breastfeeding-friendly hospital environment

[http://www.healthpolicyohio.org/wp-content/uploads/2014/02/owpn\\_psec\\_factsheet.pdf](http://www.healthpolicyohio.org/wp-content/uploads/2014/02/owpn_psec_factsheet.pdf)

*\*Adapted from the Ohio Wellness and Prevention Network PSE Fact Sheet*

## **Statewide Prevention Initiatives**

### **Project Diabetes**

Project Diabetes is a state-funded initiative administered by the Tennessee Department of Health. Grants are awarded to community partners with a focus on reducing overweight and obesity as risk factors for the development of diabetes. Grant activities are geared toward prevention strategies that are applied before there is any evidence of disease. There is a significant focus on built environment and PSE strategies.

*Project Diabetes implements Policy, Systems and Environmental changes through grants for initiatives such as the Sodabriety campaign lead by students in three counties and over 20 schools who are encouraging their peers to sign a pledge to drink fewer sugary beverages and more water.*

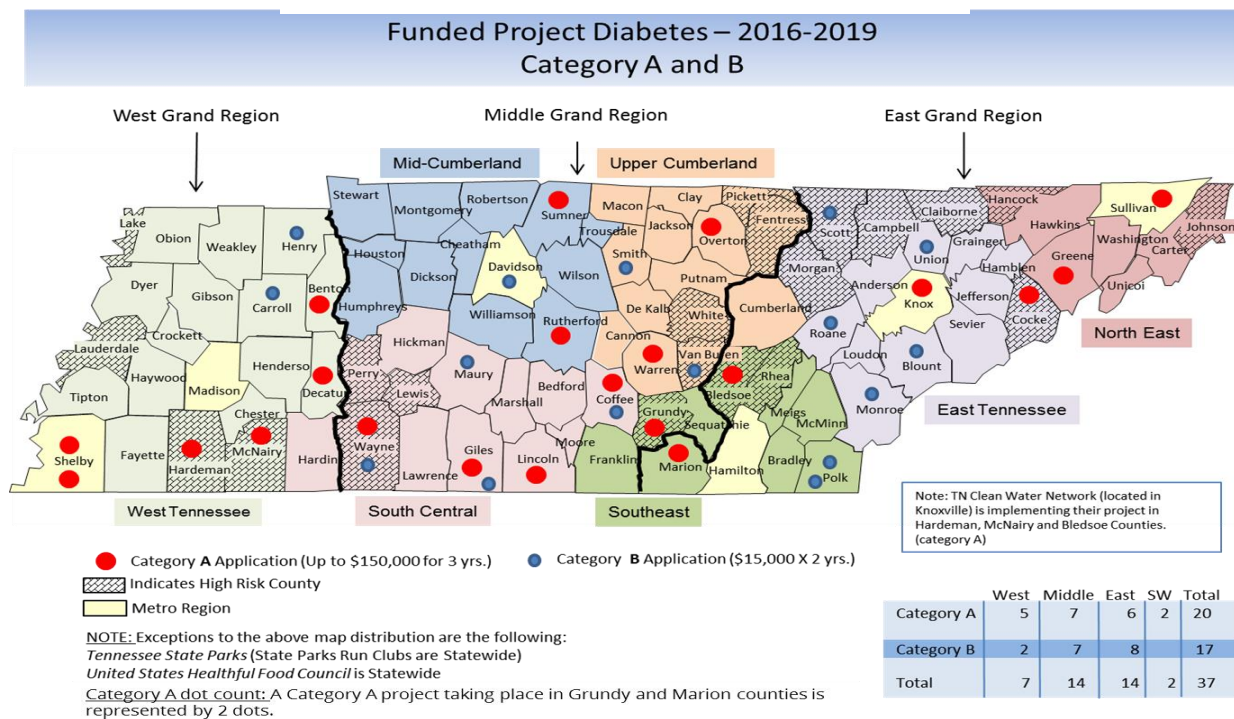
Currently funded projects were required to draw upon the prevention goals and strategies identified in the report *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation* issued by the National Academy of Medicine, formally known as the Institute of Medicine. Goals for the 2016-2019 funding are:

**Goal 1: Make physical activity an integral and routine part of life.**

**Goal 2: Create food and beverage environments that ensure that healthy food and beverage options are the routine, easy choice.**

There are two levels of Project Diabetes funding. Category A grants are funded for up to 3 years for a maximum amount of \$150,000 per year. Category B grants are funded for up to 2 years for a maximum amount of \$15,000 per year. Organizations currently funded in both Category A and B for 2016 through 2019 are displayed on the map below (**Figure 11**).

Figure 11: Location of Project Diabetes Grantees, 2016-2019



### Preventive Health and Health Services Block Grant

The Preventive Health Block Grant focuses on the prevention of cancer, heart disease, diabetes, overweight and obesity in children and adolescents, poisoning, and rape/sexual assault, as well as promoting healthy weight in adults and community-based primary prevention efforts. The Preventive Health Block Grant strategies are all aligned with the Tennessee Department of Health’s Big Four priorities.

At present, 100% of the CDC Preventive Health Block Grant funding to Tennessee is allocated from the Affordable Care Act’s Prevention and Public Health Fund (PPHF). These funds cover 57 FTE Health Educators in all 95 counties, the poison control hotline and the rape prevention and assistance hotline. The work of Health Educator specialists in Tennessee spans the Prevention Institute’s Spectrum of Prevention model, which encompasses a range of strategies including: strengthening individual knowledge and skills; promoting community and school education; educating providers; fostering coalitions and networks; changing organizational practice; and influencing policy.

### Women, Infants, and Children Program

The Women, Infants and Children program (WIC) is a federal program designed to provide supplemental food to low-income, pregnant, postpartum and breastfeeding women, infants and children until the age of five. The program provides nutrition education, healthy supplemental foods, breastfeeding promotion and support, and referrals for health care. TDH provided WIC services in 140 locations to approximately 143,744 eligible participants each month in 2016. A CDC Morbidity and Mortality Weekly Report (MMWR) that was released in 2016 analyzed WIC data from 2000-2014.

The study reported a statistically significant decrease in obesity for 2-4 year old Tennessee WIC enrollees, from 16% to 14.9%.

### Maternal and Child Health Funding

TDH administers state and federal Maternal and Child Health (MCH)/Title V Block Grant funds throughout the state to promote the health and wellbeing of families. Obesity prevention for children and adolescents is one of the MCH priority areas, and funding supports wide-ranging efforts from breastfeeding policies in workplaces and hospitals to daycare nutrition education to physical activity program implementation in schools and workplaces. MCH funds core infrastructure and provides adaptable funding to meet population needs.

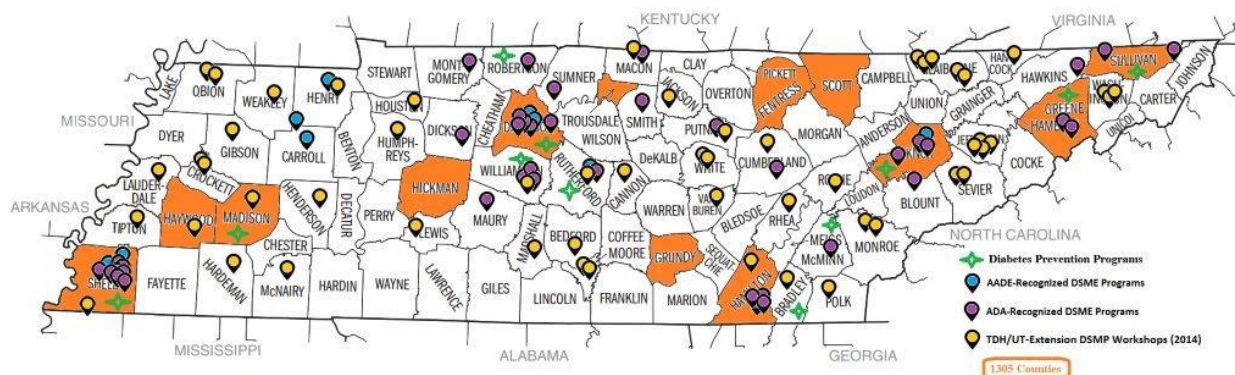
### State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (CDC 1305 Grant)

The 1305 Grant is 100% federally funded through the Centers for Disease Control and Prevention (CDC). Currently, the Affordable Care Act's Prevention and Public Health Fund is funding all of the work focused on Community-Clinical Linkages around Diabetes and Heart Disease and Stroke Prevention. The grant also supports partial funding of eight diabetes prevention programs across 13 sites statewide, as well as several other contracts covering evidence-based lifestyle change courses for Tennessee residents such as Chronic Disease Self-Management Program (CDSMP) classes, Diabetes Self-Management Education (DSME) training, CDSMP Master Training, and health care provider training.

### Diabetes Prevention Programs (DPP)

Lifestyle change programs are offered through the Center for Disease Control and Prevention's National Diabetes Prevention Program (DPP). Research shows that DPPs help to reduce risk of developing type 2 diabetes by as much as 58%. When TDH began working directly with Tennessee DPPs in May of 2015, there were approximately 10 DPPs statewide. As of October 2016, there are 22 CDC-recognized DPPs in TN. During 2016, the 22 Tennessee DPPs served

Figure 12: Tennessee's Recognized Diabetes Prevention Programs and DSMP Workshops



2,021 participants, 237 of which completed all 16 sessions over the course of one year. The average weight loss of those who completed the year was 6.5% of their initial weight.

### **Tennessee Pharmacists Association (TPA) Partnership**

An outgrowth of the DSME efforts has been a partnership with the Tennessee Pharmacy Association (TPA) to train 100 pharmacists by 2018 in the American Association of Diabetes Educators (AADE) Diabetes Self-Management curriculum. This training will result in the pharmacists becoming accredited to offer the program to residents throughout the state. TPA and the Tennessee Primary Care Association (TPCA) are also developing plans to incorporate pharmacists into team-based care in TPCA clinics and piloting an electronic communications system between clinics and pharmacies to enhance patient care for prediabetes, diabetes and hypertension.

### **Environmental Approaches to Promote Health**

Many of the PSE strategies to combat obesity and prevent diabetes span the lifespan and incorporate multiple funding sources. For example, breastfeeding provides health, nutritional, economical and emotional benefits to mother and baby. WIC promotes breastfeeding to all pregnant women as the optimal infant feeding choice through efforts such as employment of breastfeeding peer counselors as well as the designation of a designated breastfeeding expert in every county health department. Recognizing the positive impact of breastfeeding on long-term overweight/obesity risk for children, Title V/Maternal Child Health Block Grant and WIC funding are utilized to support the Tennessee Breastfeeding Hotline as part of the strategies to change the breastfeeding culture for Tennessee. The Hotline routinely receives over 500 calls per month. Additionally, hospitals in Tennessee continue to implement policies that support breastfeeding. Health educators across the state partner with businesses to develop breastfeeding supportive environments, and over 675 have received a "Breastfeeding Welcomed Here" designation. Breastfeeding initiation rose to 78.2% in 2015, from 75.9% in 2014.

TDH and the Tennessee Department of Education work closely together on many school-based strategies through the Coordinated School Health Program (CSH). CSH and TDH partner on both healthy food access and increased physical activity strategies in schools across the state using state and federal funding sources. According to the 2014-2015 Coordinated School Health BMI Report, the prevalence of obesity among kindergartners rose slightly from 2013-2014, but the five-year trend shows a negative trend (decreasing childhood obesity prevalence). Smarter lunchrooms is one strategy shared by multiple funding streams that focuses on food appeal

and placement to decrease consumption of excessive sugar and calories and increase consumption of healthy foods.

Another PSE strategy is the Gold Sneaker Initiative. Gold Sneaker enhances policy related to health and wellness within licensed child care facilities in Tennessee. Gold Sneaker consists of nine policies on physical activity, nutrition and a tobacco-free campus. Participation in Gold Sneaker is voluntary, and there is no cost to participating facilities. Child care facilities that complete an application, the required training, and implement the nine policies are designated Gold Sneaker facilities. They are also provided with an initial toolkit to promote physical activity and healthy eating and are offered ongoing technical assistance and training opportunities.

TDH has also worked closely with local and state agencies to develop sustainable plans for built environment infrastructure and policies to prevent obesity including community walking trails, worksite wellness policies, and joint use facility agreements. This work also includes the dissemination of funding opportunities and the formation of several working groups such as the interagency Tennessee Livability Collaborative.

### ***Tennessee Department of Finance and Administration***

Benefits Administration (BA) operates within the State of Tennessee's Department of Finance and Administration. The division administers health, dental, vision, life and long-term care insurance coverages for more than 275,000 public sector employees, retirees and their eligible dependents. State group insurance program participants include state government and higher education employees as well as employees of local school systems and local government agencies who choose to participate in the state-sponsored plans.

#### **Wellness Program**

BA also administers an employee assistance program and integrated disease management and wellness programs. The wellness program provides a variety of health management and wellness services using best practices and evidence-based approaches to achieve positive member outcomes. These services are available to all members of the Public Sector Plans. The goal of the program is to ensure that members have access to wellness resources, health coaching, lifestyle management and disease management services providing a comprehensive wellness approach.

The Lifestyle Management Coaching strategy includes coaching for lifestyle improvement to address behaviors that may contribute to the development of chronic conditions and diseases.

The program addresses the whole person in areas related to exercise, nutrition, stress, hypertension, cholesterol, and weight management. The Disease Management Coaching focuses more specifically on five Disease Management programs, including: Diabetes; Asthma; COPD (Chronic Obstructive Pulmonary Disease); CAD (Coronary Artery Disease); and CHF (Heart Failure). (<https://www.tn.gov/finance/article/fa-benefits-wellness>)

### **Employee Clinic DPP**

State employees have the opportunity to participate in a Diabetes Prevention Program through the state employee clinic, currently at one location. The class is delivered by BA staff at no charge to members who are enrolled in the health plan. One class is currently in the post-core phase and another class has recently been initiated.

(<http://www.partnersforhealthtn.gov/clinic.shtml>)

### ***Bureau of TennCare***

TennCare's goals of improving diabetes prevention and treatment are integrated into the State Innovation Model payment reform initiatives, including both episodes of care and primary care transformation. Episode-based payment seeks to align provider incentives with successfully achieving a patient's desired outcome during an "episode of care," a clinical situation with predictable start and end points. Episodes reward high-quality care, promote the use of clinical pathways and evidence-based guidelines, encourage coordination, and reduce ineffective and/or inappropriate care. Wave 6 included diabetes exacerbations such as diabetic ketoacidosis. (<http://www.tn.gov/hcfa/topic/episodes-of-care#sthash.yudr5Q8S.dpuf>) The Bureau of TennCare has invited TDH to participate in the process of care transformation through Technical Advisory Groups and other means.

Patient Centered Medical Home (PCMH) is part of TennCare's primary care transformation initiative. It is a comprehensive care delivery model designed to improve the quality of primary care services for TennCare members, the capabilities of and practice standards of primary care providers, and the overall value of health care delivered to the TennCare population. Tennessee has built on the existing PCMH efforts by providers and payers in the state to create a robust PCMH program that features alignment across payers on critical elements. A PCMH Technical Advisory Group of Tennessee clinicians was convened in 2015 to develop recommendations in several areas of program design including, quality measures, sources of value, and provider activity requirements. Following much stakeholder input and design work, TennCare's three health plans launched a statewide aligned PCMH program with 29 practices on January 1, 2017. PCMH providers commit to member-centered access, team-based care, population health



management, care management support, care coordination, performance measurement and quality improvement. Participating providers receive training and technical assistance, quarterly reports with actionable data, and access to the care coordination tool. These providers are compensated with ongoing financial support and an opportunity for an annual outcome payment based on quality and efficiency performance. <http://www.tn.gov/hcfa/article/patient-centered-medical-homes#sthash.w7HqmzyX.dpuf>

## ***Cross-Collaboration and Coordination between Agencies***

### **Working for a Healthier Tennessee Initiative**

“Working for a Healthier Tennessee” (WFHT) launched in June 2013. WFHT builds on the foundation established by the ParTNers for Health Wellness and EAP Programs and expands health and wellness resources to all state employees, regardless of enrollment in medical coverage. WFHT has three key focus areas: physical activity, healthy eating and tobacco cessation. There is also an emphasis on emotional health as this has a direct impact on the health and productivity of employees. Creating an environment that encourages employees to maintain their total health, both physical and emotional, aligns all participants to lead the way to a healthier Tennessee. (<http://www.tnsitechampions.com>)

### **Healthier Tennessee**

The Governor’s Foundation for Health and Wellness, a nonprofit, 501(c)(3) corporation, is dedicated to enabling and encouraging Tennesseans to lead healthier lives. The Foundation brings together a statewide coalition of employers, health insurers, hospital systems, local governments, school systems and healthcare-focused foundations and community organizations to effect positive, measurable change. The Foundation’s Healthier Tennessee initiative strives to increase the number of Tennesseans who are physically active for at least 30-minutes five times a week, promote a healthy diet, and reduce the number of people who use tobacco products. Healthier Tennessee works with communities statewide to implement targeted strategies around increased physical activity, healthy eating, and reduced tobacco use. Once a community has developed and implemented their plan, they are well on their way to being designated as a Healthier TN community. There are currently 58 communities that are designated (met all requirements) or on the way to being designated as Healthier Tennessee communities (<http://healthiarn.com/communities>). The Healthier Tennessee initiative includes the Small Starts program, which focuses on small goals and progress at the individual, family and community levels. Community-level efforts include worksites and places of worship curricula. TDH has partnered with the Governor’s Foundation to promote Healthier Tennessee

initiatives in a number of ways including training WIC staff on the Small Starts tools, engaging local health departments and health councils in the Healthier Communities pathways, and co-sponsoring promotion and technical assistance events across the state.

### **State Innovation Model (SIM)/Episodes of Care Initiative**

Both of Benefits Administration's third party administrators (BlueCross BlueShield of Tennessee, Cigna) are implementing episodes of care for the state group insurance program. The first episodes will roll out in 2017 and up to 60 episodes are scheduled to be implemented in the next several years.

### **Patient-Centered Medical Home (PCMH) Initiatives**

Both BCBST and Cigna state health plans have PCMH Initiatives for their clients. Cigna's Collaborative Accountable Care program is a primary care-centric population health, value-based payment program. BCBST's program focuses on improving the health of a population by focusing on high risk members, those with chronic conditions and those in need of preventive services. There is an emphasis on care coordination, reducing emergency department utilization and improving HEDIS quality metrics.

### ***Recommended Actions***

Long-term planning is key to successful diabetes prevention and reduction of overall diabetes-associated financial burden. Community engagement is critical and must consider factors influencing health, such as poverty, education, employment, race/ethnicity/biases, system barriers and built environment. Type 2 diabetes represents the majority of diabetes cases and is primarily related to modifiable factors such as weight and physical inactivity. Research evidence indicates that more than half of type 2 diabetes cases can be prevented or, once diagnosed, prevented from worsening. Type 2 diabetes is most often managed with a combination of medications (injectable or oral), healthy eating, active living, regular medical and preventive care, and self-management.

Based on current work in Tennessee and supported by evidence-based Public Health practice, this report recommends interventions aimed at slowing and managing the diabetes epidemic in Tennessee. These interventions include opportunities for individuals and communities to help prevent diabetes from developing, as well as increased access to programs aimed at controlling diabetes after it is diagnosed to avoid more severe health consequences. There is a focus on policy, system and environmental (PSE) changes/built environment strategies, as well as increased access to prevention, health care and self-management services. The

recommendations aim primarily to prevent and reduce diabetes occurrence and build a culture of healthy eating and active living.

**The following are recommended actionable items for consideration by the General Assembly of Tennessee:**

1. Increase access to healthy food and beverage options where people work, learn, live, play, and worship.
2. Increase access to safe and affordable active living where people work, learn, live, play, and worship across their lifespan.
3. Ensure all populations at high-risk for diabetes have access to Diabetes Prevention Programs.
4. Ensure all people with diabetes have access to self-management education from a Diabetes Education Program (Diabetes Self-Management and Chronic Disease Self-Management Education programs).
5. Increase stakeholder involvement in policy, system and environmental (PSE) change strategies that pertain to diabetes (i.e. continue to support Project Diabetes and other state Health Promotion strategies).
6. Develop opportunities to pursue environmental interventions targeting the built environment, pursue policies that reduce barriers to physical activity (i.e. transportation policies to increase space for recreational activity), and engage in multi-faceted approaches to encourage walking and cycling to school, healthier commuting and physically active leisure activities.
7. Support investment in analytics, interoperability and measurement opportunities particularly related to population health and chronic disease prevention and treatment long-term strategies.
8. Develop a statewide Health in All Policies approach to funding and infrastructure to ensure that an in-depth consideration of the health impacts are considered in all policy development and implementation.
9. Evaluate public and private insurance payment models to determine effectiveness in cost-savings and clinical quality improvement for diabetes prevention and management.