A Plan to Prevent and Control Diabetes in Delaware

A Coordinated Response for 2013-2018

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November 19, 2013

Dear Delawarean:

The healthcare system, nationally and in Delaware, is undergoing rapid change. Policymakers, providers, insurers, and consumers share concern about rising costs yet in many cases worsening health outcomes. This is particularly true about diabetes.

Diabetes is one of the costliest diseases in the United States; both in dollars and impact. The rate of Type 1 and Type 2 (and pre-diabetes) in Delaware has **more than doubled** since the mid-1990s. This report provides alarming statistics about the prevalence and trends of diabetes in Delaware where more than 11% of the total population is affected- about 90,000 people! Diabetes affects men and women, children and adults, and all races. The likelihood of being diagnosed with diabetes continues to rise annually, and upon diagnosis, Delawareans inherit not only the requirements of managing and coping with the disease but they also inherit increased risk for complications such as loss of vision, amputations, stroke, and heart disease.

The Delaware Diabetes Coalition's mission since its inception in 1999 is to improve the quality of life of Delawareans who are affected by diabetes through awareness, prevention, identification and dissemination of service information, and advocacy. Contained in this report is up-to-date data about diabetes in the First State and recommendations that formed over an extended process that brought together over 160 individuals. This blueprint is intended to stimulate action on prioritized focus areas. We know that collaboration can result in improved health for Delawareans and reduced health care costs for the system. Please join our commitment to implement these recommendations over the next five years.

Sincerely,
Delaware Diabetes Coalition Executive Committee
Lana Gordineer, Tina Trout, and CJ Jones

Executive Summary

Diabetes is a serious disease that requires extensive medical monitoring and lifelong treatment. According to the 2011 Delaware Behavior Risk Factor Survey (BRFS), 9.7% of the adult population (66,000 people) has been diagnosed with diabetes and 7.6% (47,360 people) have reported being told that they have pre-diabetes. Diabetes is currently one of the 10 leading causes of death in Delaware communities.

The plan to prevent and control diabetes in Delaware was developed by key stakeholders representing a broad range of diabetes advocates, consumers, government, businesses, medical provider community, non profits and community health providers. Built around a comprehensive framework cooperatively developed by these key stakeholders, the plan outlines goals and objectives that are specific to the prevention and control of diabetes. The *Delaware State Plan for Diabetes Prevention and Control* is intended to serve as a blueprint to help guide collaborative statewide diabetes prevention and control efforts to reduce the burden of diabetes and improve the health of Delawareans for the next five years.

The plan describes a systems approach to addressing diabetes prevention and control by aligning the state framework, which consists of 10 targeted priority areas, within four key domain areas developed by the Centers for Disease Control and Prevention (CDC).

Elements of this plan include:
- An overview of diabetes and risk factors.

- Data to show that diabetes is an emotional, physical, and costly health issue in Delaware and across the US.

- Description of the state framework of priority areas aligned with the CDC's Chronic Disease Prevention and Health Promotion domain areas.

- Specific, measurable, actionable, realistic, and time-oriented goals and objectives for each of the four domains:
    - Epidemiology and Surveillance
    - Health Systems Interventions
    - Community –Clinical Linkages
    - Environmental Approaches

- Next steps for collaboratively activating to achieve the goals and objectives.

Plan Contributors

The Delaware State Plan for Diabetes Prevention and Control was made possible through the time energy, expertise and dedication of individuals over the course of the past year. We would especially like to acknowledge and thank those who devoted the time to the working groups for developing the goals and objectives of the plan. Without their passion and dedication for Delawareans affected by diabetes, this plan would not exist.

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Introduction

A complex interaction of social, health, policy, and demographic factors contribute to diabetes and its dramatic increase in prevalence. In order to address a problem of this magnitude, coordinated contributions by health and community leaders across our state are necessary. The identification of strategies and mobilization of resources needed to curb this increase, and improve the lives of people who have diabetes requires expertise, input, and commitment from a variety of individuals with a stake in improving health outcomes related to diabetes. It is with this purpose in mind that the Delaware Diabetes Coalition, in partnership with Delaware's Diabetes Prevention and Control Program (DPCP), engaged stakeholders from across the state to update the strategic plan for combating diabetes and its complications.

The Delaware Diabetes Coalition (DCC) serves as an informal advisory body to the DPCP. The Coalition's membership includes health care professionals, non-profit organizations, insurance companies, diabetes advocates, community members and people with diabetes. The mission of the Coalition is to improve the quality of life for people in Delaware affected by diabetes through awareness, prevention, identification of services and advocacy. The Delaware Diabetes Coalition publishes the *Community Resource Guide for Persons with Diabetes* which includes statewide resources for medical, nutritional, and professional services as well as educational and financial assistance. In November, the DCC holds the annual Diabetes Wellness Expo, which offers quality diabetes information, health screenings, and educational information on diabetes management, nutrition, exercise and related health issues. This is a free event that brings together health care facilities, businesses, diabetes-related organizations, and communities to promote diabetes self-management and a healthier lifestyle for people with diabetes and prediabetes.

The Delaware Division of Public Health's Diabetes Prevention and Control Program was established in 1997, with the mission to decrease the state's emotional, physical, and financial burden of diabetes by preventing the disease and reducing its complications, the DPCP collects and publicizes current, accurate information about diabetes, develops approaches for reducing the impact of the disease, promotes lifestyle habits for prevention and control, and coordinates diabetes-related efforts of public and private health organizations. By partnering together the Delaware Diabetes Coalition and the DPCP work to improve care for people with diabetes and their families.
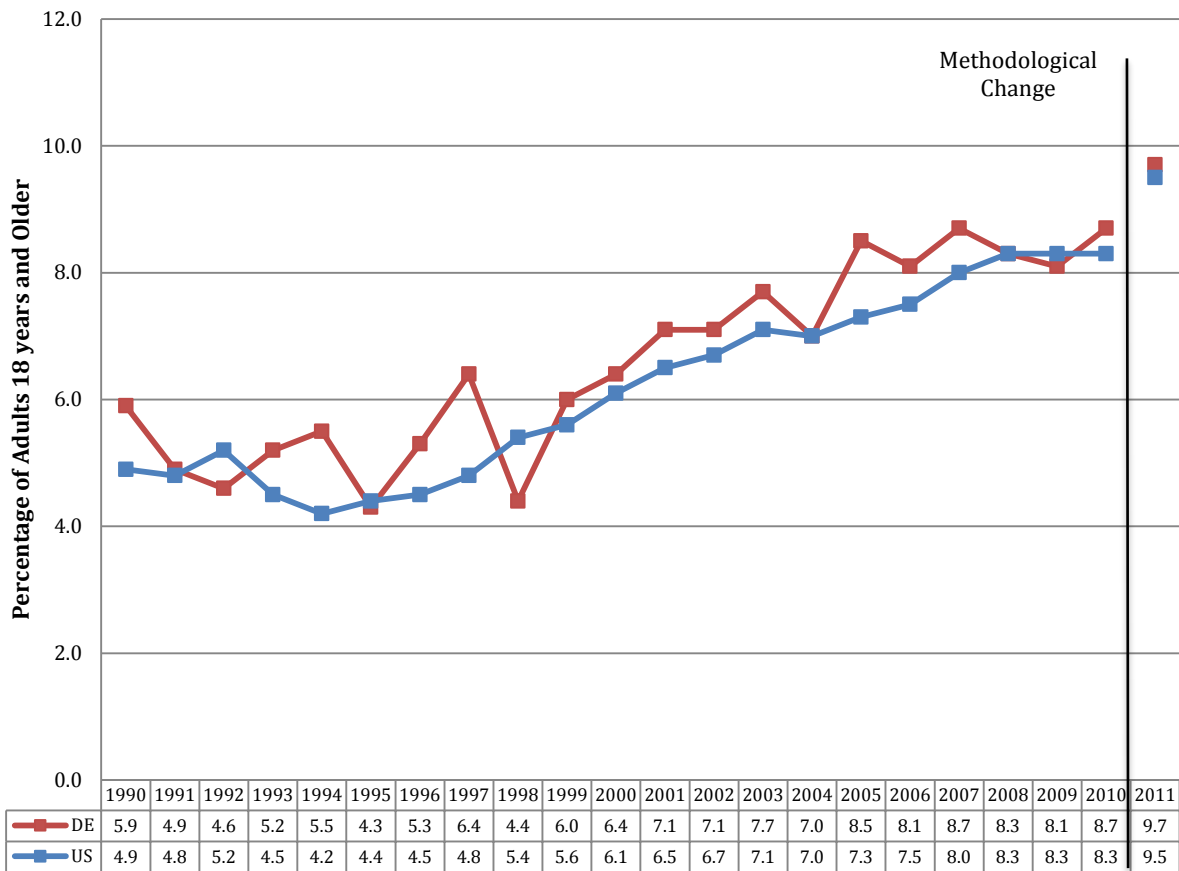
Burden of Diabetes in Delaware

Diabetes is a serious disease, requiring extensive medical monitoring and lifelong treatment. Diabetes contributes significantly to the nation's current epidemic of chronic diseases. Briefly defined, diabetes is a chronic metabolic disorder characterized by elevated levels of blood sugar which over time can seriously impact the body causing eye disease, kidney disease, nerve disease, and cardiovascular disease. If not controlled, diabetes can lead to serious chronic complications in the eyes, kidneys, peripheral nerve system, and arteries. The disease can affect nearly every organ system of the body and is a leading cause of blindness, end-stage renal disease, lower extremity amputation, cardiovascular disease, cerebrovascular disease, and peripheral vascular disease. Uncontrolled diabetes can also cause acute complications such as hyperglycemia, diabetic ketoacidosis and lactic acidosis. Women with pre-existing diabetes who become pregnant are at risk for delivering babies with preventable congenital malformations and perinatal mortality.

Diabetes is currently one of the ten leading causes of death in Delaware. Not only does diabetes cause harm to the well-being of Delaware's citizens, but its costs—in terms of morbidity, mortality, and health care spending—are substantial and growing. Without effective prevention and control of the disease, diabetes has the potential to overwhelm the healthcare system and place a tremendous financial burden on the state. Although diabetes is a chronic disease without a known cure, it can be managed to improve health outcomes.

According to the Delaware Population Consortium, approximately 920,000 persons live in Delaware. The adult population accounts for a little more than 75% of the total population. The majority (60%) of the population lives in the northern-most county, New Castle. The other two counties, Kent and Sussex, account for the remaining 18% and 22% respectively. Gender is split almost evenly, 49% male vs. 51% female. Delaware's population is 64% white, 21% black, 9% Hispanic, and 6% other racial or ethnic populations.

Figure 1. Prevalence Trends of Diagnosed Diabetes, 1990-2011

|	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
DE	5.9	4.9	4.6	5.2	5.5	4.3	5.3	6.4	4.4	6.0	6.4	7.1	7.1	7.7	7.0	8.5	8.1	8.7	8.3	8.1	8.7	9.7
US	4.9	4.8	5.2	4.5	4.2	4.4	4.5	4.8	5.4	5.6	6.1	6.5	6.7	7.1	7.0	7.3	7.5	8.0	8.3	8.3	8.3	9.5

Prevalence of Diabetes (US and DE)

The Centers for Disease Control and Prevention (CDC) report that 9.5% of the American adult population has diabetes. This percentage has increased 93.9% from 1990 to 2011. According to the 2011 Delaware Behavioral Risk Factor Survey (BRFS), 9.7% of Delaware's adult population (18 years and older) have been diagnosed with diabetes. That means more than 66,000 Delaware adults know they have diabetes, according to the Delaware Behavioral Risk Factor Survey (BRFS). Although the BRFS question does not distinguish between Type 1 and Type 2 diabetes, the National Diabetes Information Clearinghouse estimates that between 90% and 95% of people with diabetes has Type 2. In addition, this prevalence rate does not include gestational diabetes, a type of diabetes that occurs in some women during pregnancy. Since the mid-1990s, the prevalence of diabetes has more than doubled among Delawareans. In 1995, an estimated 4.3 percent of Delawarean adults had diabetes. By 2011, this number had increased to more than 9% (Figure 1). Presently, Delaware's diabetes prevalence rate is slightly higher than that of the nation.

ata Source: Centers for Disease Control and Prevention and Delaware Division of Public Health, Behavioral Risk Factor Surveillance System, 1990-2011

Diabetes Prevalence by Race

In Delaware, like the United States, the diabetes prevalence rate differs across race/ethnic groups. In 2011, diabetes was more prevalent among non-Hispanic African-American adults (13.4 %) than among non-Hispanic white adults (9.2 %). About 5.5% of Hispanic adults and 9.9% of multi-racial adults report having been diagnosed with diabetes (Figure 2).
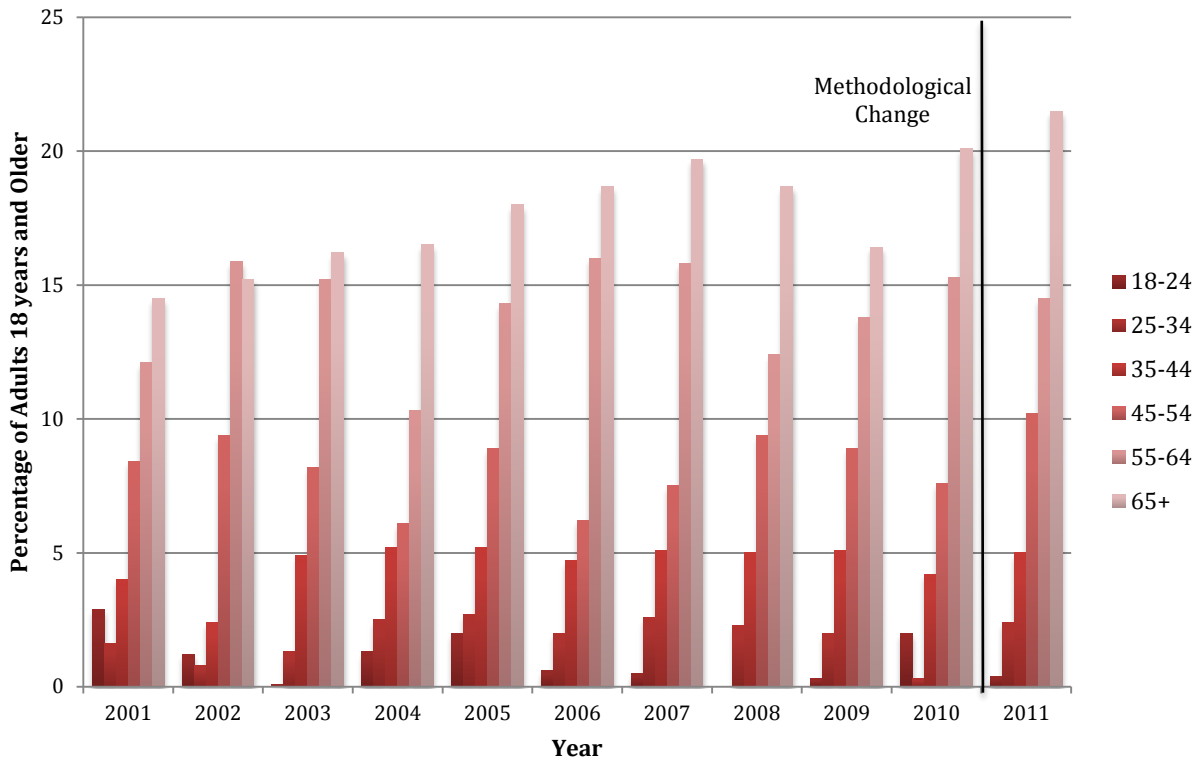
Figure 2. Diabetes Prevalence by Race, 2011
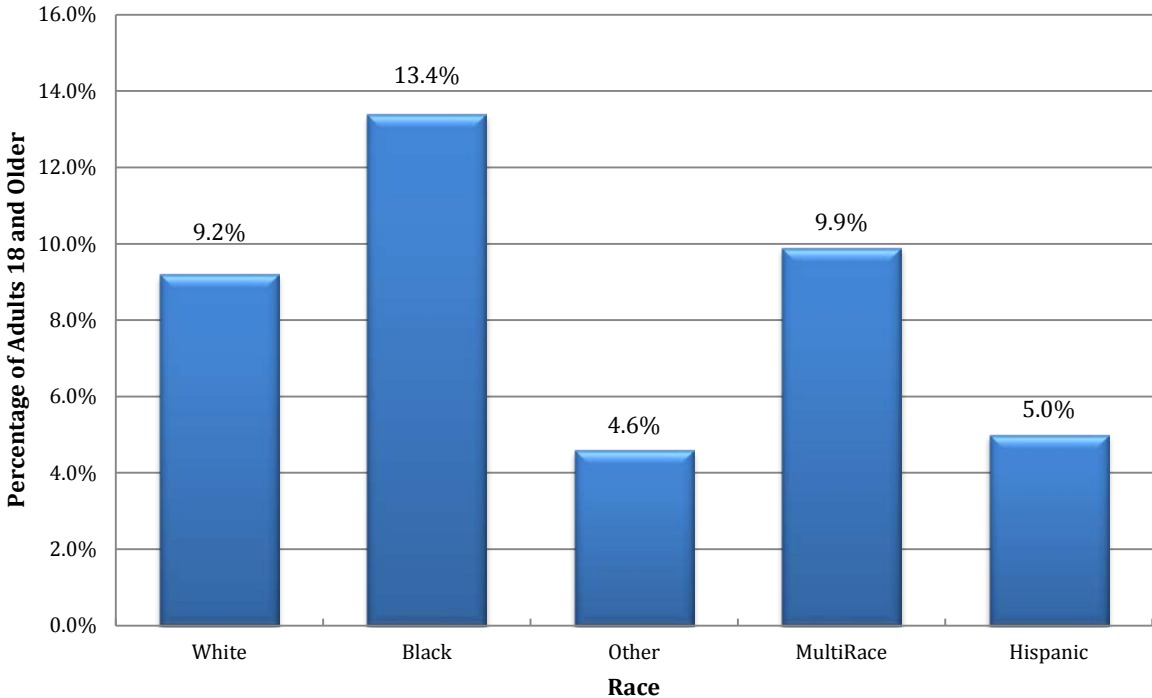
Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2011

Advancing age is a strong risk factor for the development of type 2 diabetes and the disease becomes more prevalent with age. Only 2.4% of 25-34 year olds have diabetes, but the prevalence rises to 10.2% among adults age 45-54; 14.5% among adults age 55-64; and 21.5% among those 65 and older (Figure 3).
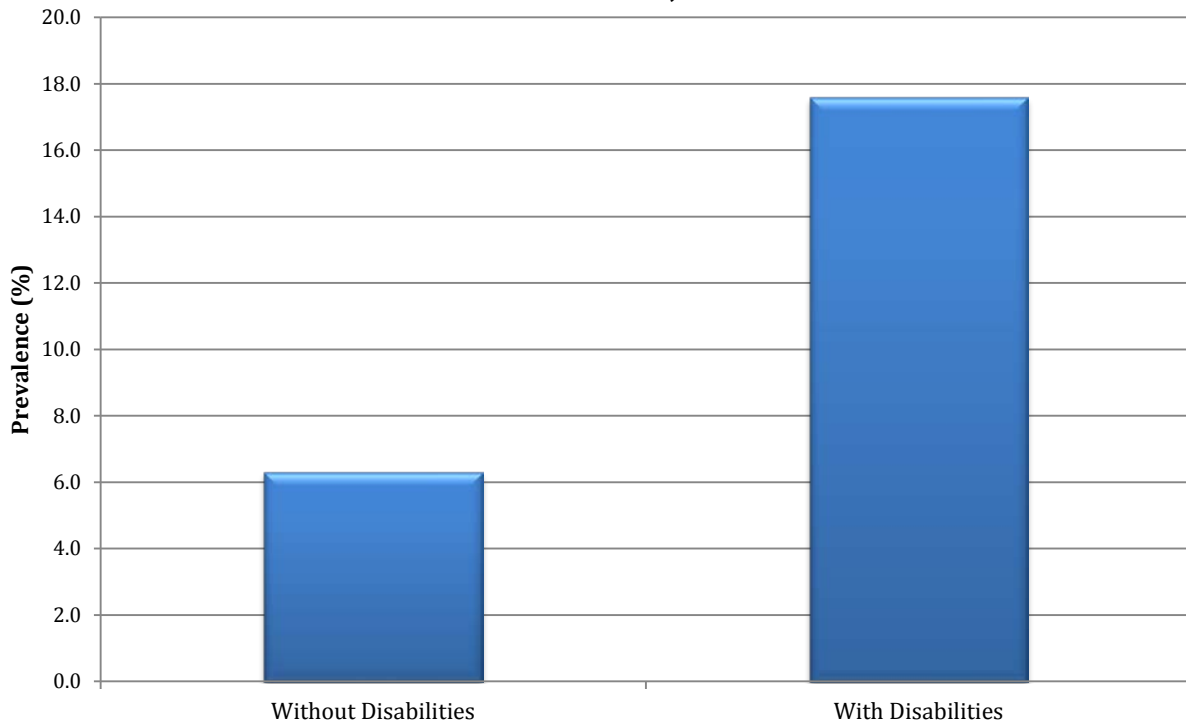
Figure 3. Delaware Trends of Prevalence of Diagnosed Diabetes by Age, 2001-2011

Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2001-2011

Interestingly, gender is not strongly associated with diabetes prevalence rates. There is little difference between men (10.0%) and women (9.4%) in the 2011 survey results. These gender-specific prevalence rates are similar to those in the U.S. At the national level, 8.1% of males and 7.9% of females have diabetes. However, adult Delawareans with disabilities have a higher prevalence of diabetes than those without reported disabilities. Among adults without disabilities, 6.3 % report being diagnosed with diabetes in 2010 (the most recent year for which this information is available). However, 17.6% of adults with disabilities have diabetes. Figure 4 below shows this dramatic difference.

Figure 4. Prevalence of Diabetes, Without Disabilities vs. With Disabilities, 2010

Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2010

The survey asks about pre-diabetes, also known as borderline diabetes. In 2011, among adults who do not have diagnosed diabetes, 7.6%—or more than 47,360 Delawareans—reported being told they have pre-diabetes. People with pre-diabetes are at risk for developing Type 2 diabetes, but they can significantly reduce that risk by increasing physical activity and eating a healthier diet.

Risk Factors

Type 2 diabetes risk factors belong to one of two categories: (1) modifiable risk factors or (2) non-modifiable risk factors. Modifiable risk factors – those that individuals have some degree of control over – include limited or no physical activity, overweight/obesity status, elevated fasting and/or post-meal glucose levels, and a high percentage of body fat (especially in the abdominal area). Preliminary research also suggests that excessive alcohol consumption and tobacco use may contribute to the development of Type 2 diabetes; however, more research is necessary to establish causality. When these risk

factors are reduced or eliminated through healthy lifestyle changes, a person's chance of developing Type 2 diabetes substantially decreases. Non-modifiable risk factors for diabetes include family history of the disease, advancing age, and minority status. Unfortunately, no intervention can reduce or eliminate non-modifiable Type 2 diabetes risk factors.

Being overweight or obese, or having a body mass index (BMI) over 25.0, is a major contributing factor for developing diabetes. Obesity among Delaware adults has doubled during the past two decades, from 14.4% in 1990 to 28.5% in 2011. During the same two decades, the prevalence of adult diagnosed diabetes also doubled, from 4.9% in 1991 to 9.7% in 2011.

Demographic factors for diabetes closely parallel the factors related to overweight and obesity prevalence. Obesity is significantly higher among African-American adults, and they have the highest rate of diabetes. Adults with lower educational levels and low income are more likely to be obese, and more likely to have diabetes. Diabetes prevalence is higher in Kent and Sussex counties, where obesity prevalence also is higher in those two counties versus New Castle County.

Table 1. Diabetes and Obesity Prevalence by County.

2011 Diabetes Prevalence by County			
State	**New Castle**	**Kent**	**Sussex**
9.7%	8.5%	12.1%	10.7%
2011 Obesity Prevalence by County			
State	**New Castle**	**Kent**	**Sussex**
28.8%	25.1%	33.4%	33.7%

Source: Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 2010-2011.

In 2011, only 3.8% of people with healthy weights (BMI under 25) reported being diagnosed with diabetes, compared to 8.6% of adults who are overweight (BMI 25-29.9) and 19.4% of adults who reported weights considered obese (BMI >30). About 55% of all

adults diagnosed with diabetes are obese, and almost 30% are overweight. Another key risk factor is physical activity. Of those reporting sufficient physical activity, only 6.4% have been diagnosed with diabetes. In contrast, 8.7% of those with insufficient physical activity and 14.6% of those who are inactive report having diabetes. Additionally, only 32% of all adults diagnosed with diabetes report having sufficient physical activity.

Preventive Care and Disease Management

Diabetes is the leading cause of kidney failure, non-traumatic lower-limb amputations, and new cases of blindness among adults in the United States. Diabetes is a major cause of heart disease and stroke and is the 7th leading cause of death in the United States.

Those with diabetes can take measures to help prevent the development of diabetes-related complications, such as those listed on the previous page. These preventative measures target eye, kidney, foot, teeth, and gum health. People with diabetes are encouraged to follow the following guidelines: receive annual dilated eye exams, routine testing for microalbuminuria, daily blood glucose monitoring, A1cs as recommended and regular dental exams; conduct daily at-home foot exams; and achieve optimal blood pressure, cholesterol, and blood lipid control.

In Delaware, according to the 2011 BRFS, about 47% of people with diabetes have taken a class on how to manage their disease. Only 69.2% check their blood sugar at least once per day. Among people with diabetes, 66.1% reported conducting a daily foot exam. Almost 92.4% reported going to the doctor at least once in the last year and 88.2% report having their HbA1C checked within the last year. About 72.8% of people with diabetes have had an eye exam in which their pupils have been dilated within the last year. However, almost 15.0% have been told by their doctor that their diabetes has affected their eyes or they have retinopathy.
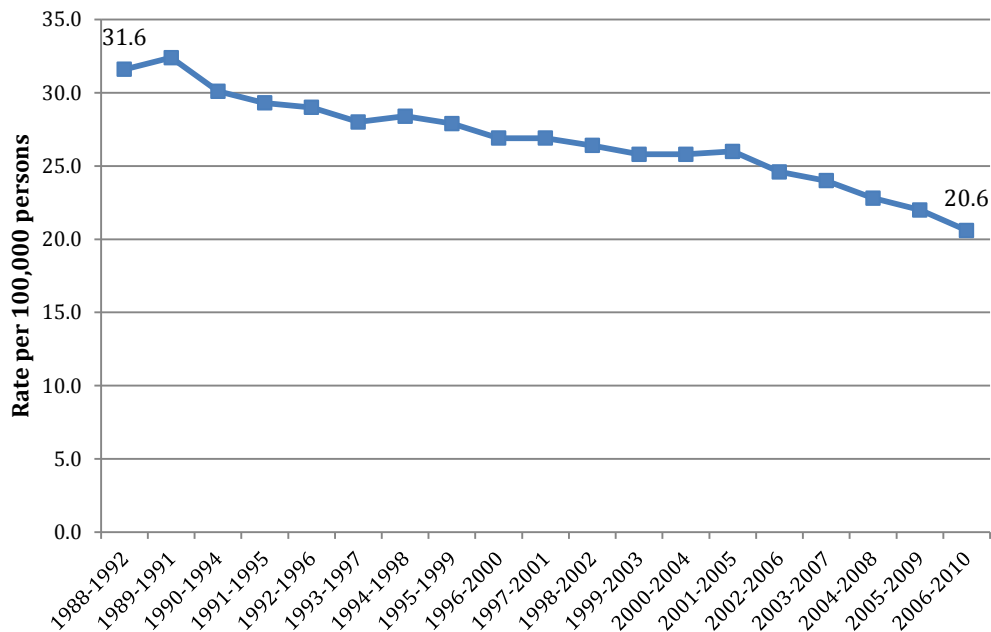
Cost of Care

Costs associated with the treatment of diabetes and its related complications place an enormous financial burden not only on the individuals with diabetes, but on society at large. The CDC estimates the cost of diabetes in the Unites States is approximately $174 billion in direct and indirect expenses. Direct medical costs account for $116 billion and indirect costs, including costs due to unemployment, reduced productivity at work, and increased absenteeism, account for $58 billion. People with diabetes have health care costs that are 2.3 times higher than those for people without diabetes, with a total cost of diabetes for people in Delaware in 2006 estimated at $492.1 million. This estimate includes excess medical costs of $319.3 million attributed to diabetes, and lost productivity values at $172.8 million.

Mortality

The risk of death among people with diabetes is about twice that of people of similar age but without diabetes. According to the Delaware Health Statistics Center, the five-year age adjusted mortality rate for diabetes is 20.6 per 100,000 deaths. As shown in Figure 5, there has been a 35% decrease in overall age-adjusted mortality rates from 1988-1992 to 2006-2010.

Figure 5. Five Year Age-Adjusted Diabetes Mortality Rates in Delaware, 1988-2010

African Americans have seen a 43% decrease in age-adjusted diabetes mortality rates from 1988-1992 to 2006-2010. Caucasians have seen a 34% decrease in age-adjusted diabetes mortality rates during the same time period. However, African American mortality rates (38.7 per 100,000 deaths) were over twice as high as Caucasians (17.8 per 100,000 deaths) during 2006-2010 (Figure 6). Both African American male and female mortality rates (45.0 per 100,000 deaths and 33.9 per 100,000 deaths respectively) are twice as high as Caucasian male and female mortality rates (21.5 per 100,000 deaths and 14.6 per 100,000 deaths respectively).

Figure 6. Five-year Age Adjusted Diabetes Mortality Rates by Race in Delaware, 1988-2010
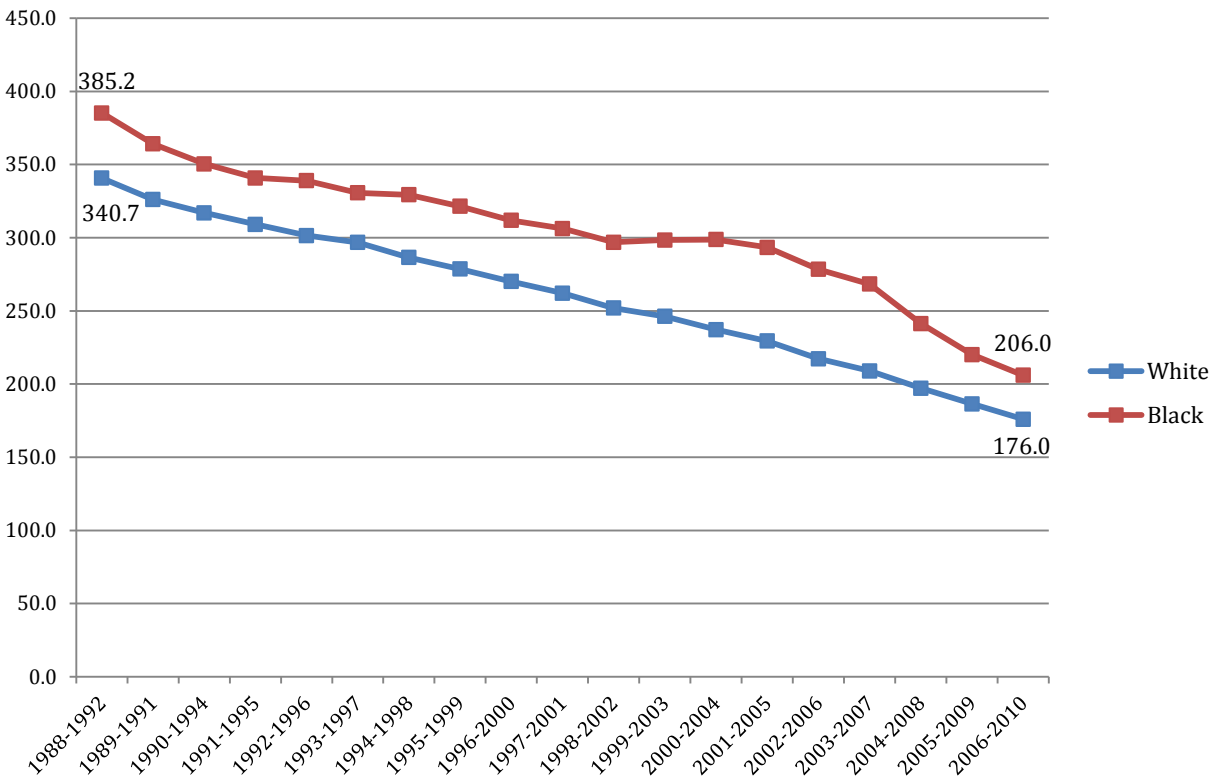
Source: Delaware Vital Statistics Annual Report 2008, 2010

The trends outlined in this section underscore the issue of diabetes as a deadly chronic disease at epidemic levels in the state of Delaware. The disease disproportionately affects some of the most vulnerable Delawareans, including racial minorities, older adults, the

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poor, and the incarcerated. The cost of care for diabetes and related complications is expensive and increasing. Because increasing numbers of Delawareans are overweight and fail to get enough exercise, these numbers will continue to rise. These trends provide the impetus for a comprehensive planning effort and signal a call to action to prevent diabetes through healthier living, and provide treatment to those who have the disease. Ultimately, the goal of a statewide plan is to implement strategies that are designed to help ensure all Delawareans receive the care they need to alleviate the emotional, physical, and financial burdens associated with diabetes.

Delaware Statistics on Diabetes

Delaware's Division of Public Health Diabetes Prevention and Control Program (DPCP) provides updated information about the burden of diabetes in Delaware at http://dhss.delaware.gov/dhss/dph/dpc/diabetes.html. This report in an extensive analysis of the current trends associated with diabetes and its complications. The following information includes a summary of the most current data.

Planning Process

The statewide planning process was driven by the need to update the current diabetes state plan and align the next cycle strategic plan with new federal directions put into place by the Centers for Disease Control and Prevention (CDC) to address the Affordable Care Act. This *Delaware State Plan for Diabetes Prevention and Control* was facilitated by the Delaware Diabetes Coalition in partnership with the Delaware Division of Public Health's Diabetes Prevention and Control Program. The plan is based on current evidence-based practices, as well as the opinions of key stakeholders representing multiple areas of the diabetes prevention and control system. In an effort to ensure a broad representation of participants, the Delaware Diabetes Coalition and the state Diabetes Prevention and Control Program called on a wide range of key stakeholders to develop an action plan to identifying the needs and gaps for Delaware to provide quality care for Delawareans who have diabetes or prediabetes.

The *Delaware State Plan for Diabetes Prevention and Control* is intended to be a blueprint to guide the collaborative efforts to reduce the burden of diabetes and improve the health of Delawareans over the next five years. This plan demonstrates a commitment to improving the Delaware health system based on state and national diabetes public health priorities related to diabetes. The plan was developed with input from multi-disciplinary groups of stakeholders such as representatives from primary care providers, diabetes educators, physicians, healthcare plans, public health programs, patient advocacy groups and community-based organizations.

The plan was produced in two major phases: the development of the State Framework for Diabetes Prevention and Control and the alignment of the framework with the CDC's strategy for chronic disease prevention and health promotion.

Phase 1: State Framework for Diabetes Prevention and Control

One of the most important steps in the development of the new strategic plan was to engage partners and stakeholders in an organized and systematic decision making processes. The Centers for Disease Control and Prevention (CDC) considers partnership and stakeholder engagement fundamental to taking meaningful action to achieve goals and objectives. The framework development phase involved 165 stakeholders lending their expertise, and expressing opinions and ideas representing different areas of focus for the planning of prevention and control of diabetes. The framework development process centered on the use of structured group concept mapping[1], a mixed methods planning and evaluation approach. This approach combined the ideas of diverse stakeholders in unique ways to understand how the entire group thinks about statewide prevention and control of diabetes, and produced a clear visual representation of how the group as a whole thinks about what should be done to decrease the burden of diabetes for the people of Delaware.

To begin the process, participants were asked to identify specific ways to decrease the burden of diabetes for the people of Delaware. These individuals were specifically identified for their knowledge of and involvement with various aspects of diabetes prevention and control. Second, a select group of framework development participants were asked to organize and assign values to the input so that the key areas and priorities could be identified. Finally, this information was analyzed and reproduced so that stakeholders could interpret, discuss, and incorporate current thinking for planning purposes.

The input from across this diverse group suggested that **ten** major issues can be considered as a meaningful framework when developing a roadmap and strategic plan for the prevention and control of diabetes in the state of Delaware. The 10 areas of the comprehensive framework is represented in Figure 7. Within each of these 10 key areas,

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[1] Kane, M. & Trochim, W.M.K. (2007). Concept Mapping for Planning and Evaluation. Thousand Oaks, CA: Sage Publications

specific actions also surfaced as priorities, based on the perceived level of importance and feasibility on the part of the stakeholders. The intersection of importance and feasibility of the priorities suggest actions that can be undertaken by the state to address the burden of diabetes over the next five years.

Figure 7. State Framework for Diabetes Prevention and Control
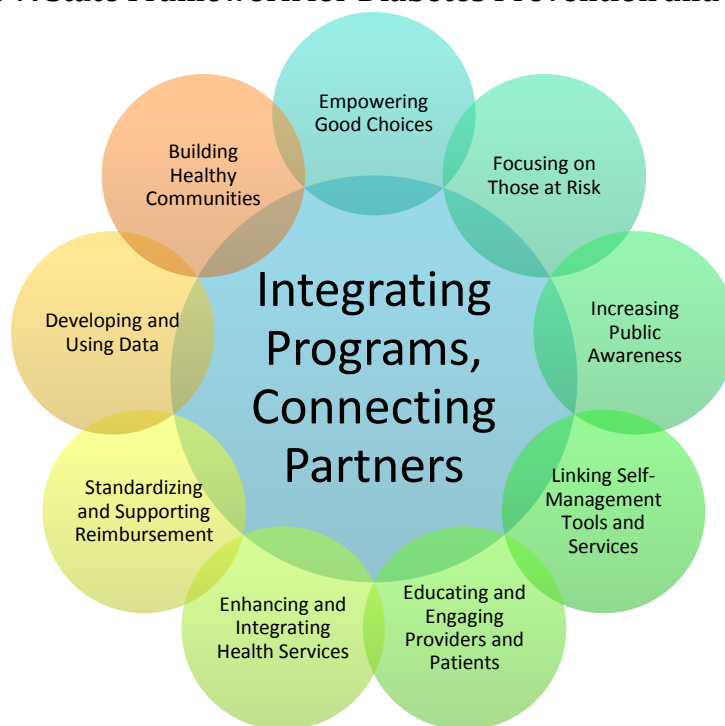
Phase 2: Alignment with CDC's Chronic Disease Prevention and Health Promotion Domains

It is increasingly recognized that individual health depends on societal health and healthy communities. In addition to having strong medical care systems, healthy communities promote and protect health across the lifespan, across a variety of sectors, and through a range of policies, systems and environmental supports that put health in the people's hands and give Americans even greater opportunity to take charge of their health.

The CDC has identified four domains, critical to transforming the nation's health and providing Americans with equitable opportunities to take charge of their health. It is

within these four domains that strategies should be designed and implemented to comprehensively address chronic disease and improve health outcomes. The four domains are viewed as interrelated areas:

- **Epidemiology and Surveillance** – collection of appropriate data to monitor risk factors, social determinants of health, environmental change policies, and chronic conditions.
- **Health Systems Interventions** - organization of systems of care to increase the access, use, and delivery of high-quality clinical and other preventive services.
- **Community-Clinical Linkages** – implementation of systems and guidelines to outreach, educate, and connect the population in community settings with clinical care.
- **Environmental Approaches** – development of strategies that emphasize access to safe, affordable, and available resources for promoting and supporting healthy behaviors in the broader community.

With these four domains in mind, the Delaware State Framework for Diabetes Prevention and Control was examined carefully, and the 10 areas identified in phase 1, were aligned with the domains emphasized by the CDC. The results of this alignment are shown in Figure 8, and reveal substantial overlap and integration between the two.

The next step in the alignment process was to organize workgroups for each of the four domains in order to review and consider priorities and develop objectives to drive action. The workgroups were convened to review the list of priorities from phase 1, identify strengths, weaknesses and gaps in diabetes prevention and control in the state of Delaware, and consider what already existed in the state in relation to these priorities. Each workgroup identified **six** top priorities in their respective domain, and developed the selected priorities into objectives, following the SMART (Specific, Measurable, Actionable, Realistic, and Time-oriented) approach. These 24 objectives, supporting a corresponding strategic goal for each domain, frame the strategy for comprehensively addressing diabetes prevention and control for the next five years.

Figure 8. Alignment of DE state framework with CDC's Chronic Disease

Figure 8. Alignment of DE state framework with CDC's Chronic Disease Prevention and Health Promotion Domains.

Delaware State Framework for Diabetes Prevention and Control

CDC Chronic Disease Prevention and Health Promotion Domain	Building Healthy Communities	Empowering Good Choices	Integrating Programs, Connecting Partners	Developing and Using Data	Increase Public Awareness	Focusing on Those at Risk	Linking Self Management Tools and Services	Educating and Engaging Providers and Patients	Enhancing and Integrating Health Services	Standardizing and Supporting Reimbursement
Epidemiology and Surveillance			■	■						
Environmental approaches	■	■	■		■	■	■	■		
Health systems interventions		■	■		■		■	■	■	
Strategies to improve community-clinical linkages			■				■	■	■	■

Goals and Objectives for Addressing Diabetes in Delaware

The following goals and objectives are the result of dialogue and deliberation among workgroup members as they considered the input of the broader group of statewide stakeholders. Each domain is framed by a rationale as to the importance of the domain to advancing diabetes prevention and control in the state, and provides the foundation for the state goals.

Epidemiology and Surveillance

Investments in epidemiology and surveillance capacity will enable Delaware to develop the necessary expertise to collect data and information, develop and deploy effective interventions, identify and address gaps in program delivery, and monitor and evaluate progress in achieving program goals. Utilization of data and information to inform decision

makers and the public regarding the effectiveness of preventive interventions, the burden of chronic diseases and their associated risk factors, public health impact, and program effectiveness require a comprehensive epidemiology and surveillance system.

State Goal: Gather, analyze, and disseminate data and information and conduct evaluation to inform, prioritize, deliver, and monitor diabetes programs and the health of Delawareans.

> *Objective 1*: From January 2013 through December 2017, data will be utilized from the Behavioral Risk Factor Surveillance System, Medicaid, Medicare, Federally Qualified Health Centers, vital statistics, hospital discharge data, and chief complaint data for updating and producing the annual Burden of Diabetes in Delaware statewide report.

> *Objective 2*: By December 2014, through the use of ArcGIS, produce maps that visualize existing diabetes and chronic disease self-management class locations and at-risk populations for program planning at the community level.

> *Objective 3*: By December 2014, conduct one diabetes validation study comparing prevalence rates of cancer calculated using Delaware's Behavior Risk Factor Survey and Delaware's Cancer Registry data.

> *Objective 4*: By December 2014, establish one statewide integrated group of organizations, programs, agencies, non-profits and community partnerships to examine the social determinants of health associated with diabetes, risk factors and related disparities.

> *Objective 5*: By December 2016, annually conduct quarterly (4) evaluations on both the Diabetes and the Chronic Disease Self-Management Programs.

Objective 6: By December 2018, produce one annual subset publication of the Burden of Diabetes in Delaware, utilizing result analyses of the most recent diabetes data and distribute to 50 community-based organizations that implement diabetes treatment and prevention programs.

Epidemiology and Surveillance	Potential partners to plan for, develop systems, and coordinate the collection of appropriate data to monitor risk factors, social determinants of health, environmental change policies, and chronic conditions.	*State Agencies*
		Colleges and Universities
		Federal Agencies
		Hospitals & Health Systems
		Health Insurance Providers
		Data Centers

Health Systems Interventions

The health care system is made up of the people, institutions, and resources—arranged together in accordance with established policies—whose primary purpose is to promote, restore, and maintain health. It includes government agencies, hospitals and other health services, health insurance organizations, voluntary and private health organizations, as well as the pharmaceutical industry and drug wholesale companies. Health systems interventions are designed to improve the clinical environment in ways to more effectively deliver quality preventive services, thereby helping Delawareans better use and benefit from those services. The result is that chronic diseases and conditions like diabetes may be avoided completely, be detected early, or managed better to avert complications and progression and improve health outcomes. Thus, effective outreach to consumers while simultaneously reducing barriers to accessing these services is crucial, as coverage alone will not ensure use of preventive services.

State Goal: Improve the effective delivery and use of clinical and other preventive services in order to prevent diabetes, detect diabetes early, reduce or eliminate risk factors associated with diabetes, and mitigate or manage complications.

Objective 1: By December 2014, develop one comprehensive system for tracking location sites and quantity distribution of the Delaware Diabetes Coalition's Resource Guide for Persons with Diabetes.

Objective 2: By December 2014, develop and provide annually, a one page informational advocacy fact sheet for addressing policies among legislatures and health care organizations for the purpose of contributing towards and supporting sustainable quality-of-care improvements for people with diabetes or pre-diabetes.

Objective 3: By December 2016, develop one validated tool to measure and assure all diabetes and prevention intervention programs are culturally competent.

Objective 4: By December 2016, develop one comprehensive distribution tracking system for diabetes detection, treatment, prevention and control resources.

Objective 5: By December 2016, develop electronically, one interactive information technology component utilized to provide up-to-date standards of care to healthcare providers/staff including nurses, dieticians, diabetes educators and pharmacist.

Objective 6: By December 2018, implement a campaign on pre-diabetes and its associated risk factors using 6 media outlets that target to the general public and health professionals.

Health Systems Intervention	Potential partners to collaborate on the organization of systems of care to increase	*Quasi-Governmental Organizations*
		Primary Health Care Providers

	the access, use, and delivery of high-quality clinical and other preventive services.	*Health Associations*
		Health Profession Organizations
		Hospitals & Health Systems
		Health Insurance Providers
		State Agencies
		Community Health Centers
		Medical Societies
		Home health Agencies

Community-Clinical Linkages

Community-clinical linkages will help ensure that Delawareans with or at high risk of diabetes have access to community resources and support to prevent, delay or manage chronic diabetic conditions once they occur. These supports include interventions to increase the likelihood Delawareans will take action to improve their quality of life, averting or delaying onset or progression of disease, avoiding complications (including during pregnancy), and reducing the need for additional health care. Essential components can include: 1) identification and management of people with diabetes or a subset with certain risk factors for poor outcomes, 2) consistent use of appropriate diabetes standards of care by healthcare providers/staff including nurses, dietitians, and pharmacists, 3) implementation of information systems for tracking and monitoring patient care and education, and 4) measurement and management of patient outcomes.

State Goal: Improve community-clinical linkages to ensure communities support and clinics refer patients to programs that improve the prevention or management of diabetes.

Objective 1: By December 2014, develop one comprehensive assessment tool for identifying gaps and evaluating the effectiveness of active existing community level evidence-based diabetes prevention and control programs.

Objective 2: By December 2014, engage payers and policy makers in a series of meetings to dialogue and draft language to support outcome-based payment reforms that incentivize evidence-based standards of clinical care.

Objective 3: By December 2015, coordinate the goals and objectives contained within this diabetes plan with the Governor's Council on Health Promotion and Disease Prevention objectives and develop a supporting document articulating the coordination.

Objective 4: By December 2016, assure continued access to public and private diabetes services and supplies for low-income and special population Delawareans who remain uninsured (after implementation of the Health Insurance Exchange) by re-examining eligibility and enrollment requirements of those people still needing services.

Objective 5: By December 2016, identify the diabetes specific outpatient and supply benefits of four of the largest public and private health plans; create and distribute one quick reference document for distribution to the medical provider community.

Objective 6: By December 2018, engage 50% of all Delaware payers and providers in a dialogue to share the evaluation results of existing community-based prevention and self-management programs and stimulate discussion about covered service gaps.

Community-Clinical Linkages	Potential partners to plan for and develop tactic and strategies for implementation of systems and guidelines to outreach, educate, and connect the population in community settings with clinical care.	*Primary Health Care Providers*
		Health Insurance Providers
		State Government
		Hospitals & Health Systems
		Businesses/Corporations
		Community Initiatives
		Health Education Centers
		Federally Qualified Health Centers
		Certified Diabetes Educators
		State Service Centers
		Non-Profits

Environmental Approaches

Improvements in the social and physical environments will make healthy choices and behaviors easier and more convenient for Delawareans. These approaches may address availability, accessibility, or social norms. Broadening social interventions to include supportive environmental changes may 1) make it easier for individuals to achieve and maintain behavior changes, and 2) assure the optimal use of limited public health dollars by reducing the mean level of risk for the target population. A healthier state delivers healthier students to our schools, healthier workers to our businesses and employers, and a healthier population to the health care system. Environmental approaches have broad reach, sustained health impact and are best buys for public health.

State Goal: Increase the development and dissemination of approaches that promote health and support and reinforce healthful behaviors across locales (statewide in schools, worksites, and communities).

> *Objective 1*: By December 2014, develop one unified marketing strategy for healthy lifestyle messaging and chronic disease prevention.

> *Objective 2*: By December 2015, implement at least 12 diabetes education and/or primary prevention programs at worksites where high risk Delawareans are employed.

> *Objective 3*: By December 2017, provide one comprehensive educational outreach tool to promote healthy lifestyle choices in daily life to decrease the risk of early onset diabetes management in our youth.

> *Objective 4*: By December 2018, develop and implement four culturally competent and appropriate lifestyle modification interventions targeting African Americans, Asians and Hispanic and other high risk populations for the purpose of reducing obesity.

Objective 5: By December 2018, through use of an evidence based program modeled after the Primary Prevention Studies, implement a structured curriculum that will reach at least 15% of Delawareans who are identified with or are at risk for pre-diabetes.

Objective 6: By December 2018, identify one comprehensive approach in integrating the health service delivery system addressing diabetes, pre-diabetes and primary prevention through the utilization of non-traditional health workers for creating healthy neighborhoods.

Environmental Approaches	Potential partners to focus on the development and implementation of strategies that emphasize access to safe, affordable, and available resources for promoting and supporting healthy behaviors in the broader community	*Schools, Colleges, and Universities*
		Community Organizations/Action Agencies
		Local Associations
		Private/Corporate Foundations
		Faith-Based Organizations
		Community Initiatives
		Businesses/Corporations
		County/Local Governments
		Youth-Serving Organizations
		State Agencies

Next Steps for Activating an Implementation Plan

Achieving the goals and objectives of the plan will require continued collaboration between everyone who is a part of the state diabetes public health system today, as well as future expansion of the system to incorporate new partners. Working together and using this plan as a guide, we can reduce the enormous burden of diabetes in Delaware and improve the quality of life for those people who are affected by the disease.

While the strategies included in the plan do not provide a detailed description of how they should be carried out, the plan can serve as a guide for further action. For example, committees can be formed on the basis of domains, the function of which would be to develop specific steps and tactics for actualizing the objectives, and subsequently achieving the state goals. Furthermore, public, non-profit, and private resourcing of prevention and control efforts can be considered from the standpoint of the plan's objectives, so that collaborative action may be realized. In essence, the *Delaware State Plan for Diabetes Prevention and Control* should be considered a living document, an affirmation of the commitment of stakeholders across the state to integrate and coordinate efforts to address diabetes and its complications.

The time is now to work together and take action on the prevention and control of diabetes in the public health system, work sites, medical care system and communities. The foundation has been established through the dedication of these partners who developed a course of action for the state of Delaware. By using this plan to frame the steps to take action, we can greatly reduce the burden of diabetes in the state. We greatly appreciate all of those who took part in developing this statewide plan and their support on achieving the goals and objectives for diabetes prevention and control in Delaware.

Definitions

A1c (hemoglobin A1c or HbA1c) – A clinical test used to gauge the level of blood glucose control. It provides an average of the blood glucose levels for the past 120 days. A1c levels can range from about 6% (normal) to as high as 25% (uncontrolled glucose levels). Regular A1c testing is essential for monitoring the effectiveness of diabetes treatment plans.

Acute – Describes something that happens suddenly and for a short time. Opposite of chronic.

ArcGIS – A software package that integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. GIS allows the audience to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts.

Behavioral Risk Factor Survey (BRFS) – The largest continuously conducted telephone survey in the world. The Centers for Disease Control and Prevention coordinates and provides funding for the BRFS Survey. It is conducted annually in all 50 states, the District of Columbia and several territories. The survey includes questions about disease prevalence, risk factors, lifestyle and health behaviors.

Behaviors – An individual's lifestyle choices (such as good nutrition, regular physical activity, and actions to control blood glucose, blood lipid and blood pressure levels) that decrease the risk of diabetes or its complications.

Burden – Is the impact of a health problem measured by indicators such as financial cost, environmental risk,

Blood Glucose – The main sugar that the body makes from food we eat. Glucose is carried through the bloodstream to provide energy to all of the body's living cells. The cells cannot use glucose without the help of insulin.

Blood Lipid Test – Through this test, doctors measure he various forms of cholesterol and other fats in the blood together called lipids. From these results they can diagnose high cholesterol.

Blood Pressure – The force of the blood against artery walls. Blood pressure is expressed as a ratio (example: 120/80, read as "120 over 80"). The first number is the systolic (sis-TAH-lik) pressure, or the pressure when the heart pushes blood out into the arteries. The second number is the diastolic (DY-uh-STAH-lik) pressure, or the pressure when the heart rests.

Body Mass Index (BMI) – A formula that assesses both height and weight in order to classify overweight and obesity and to estimate the relative risk of disease. BMI status includes <18.5 underweight, 18.5-29.9 kg/m2 normal, 25.0-29.9 kg/m2 overweight, and >30.0 kg/m2 obese.

Cardiovascular Disease - A disease of the heart or blood vessels.

Causality – The relationship between causes and effects.

Chronic Disease – An illness that is present over a long period of time. Diabetes is a progressive chronic disease that requires ongoing treatment and monitoring, as yet there is no cure.

Congenital malformations – A physical defect present in a baby at birth that can involve many different parts of the body, including the brain, heart, lungs, liver, bones, and intestinal tract.

Cultural Competency – cultural competence refers to the design and implementation of services that are tailored or matched to the unique needs of individuals, children, families, organizations and communities served.

Diabetes Educator – A health care professional who teaches people with diabetes how to manage their disease (some diabetes educators are certified diabetes educators: professionals with expertise in diabetes education who have passed a certification exam). Diabetes educators work in hospitals, physician offices, managed care organizations, home health care services and other settings.

Diabetic Ketoacidosis – A life threatening condition in persons with type 1 diabetes that requires immediate treatment. It is characterized by extremely high blood glucose levels with the presence of ketones in the urine and bloodstream. Left untreated, diabetic ketoacidosis can lead to coma and death. Symptoms include: nausea and vomiting, stomach pain, fruity breath odor and rapid breathing.

Dilated eye exam – A specific eye exam that includes dilating the pupil of the eye so that the retina (the back of the eye) can be carefully examined. This type of exam is crucial for people with diabetes.

Disparities – A term used in the public health arena to describe populations receiving unequal treatment based on differences such as gender, race, ethnicity, income, disability, education, geographic location or sexual orientation.

End-stage Renal Disease - Is the late stage of chronic kidney disease when the kidneys are no longer able to work at a level needed for day-to-day life. Also known as renal failure.

Gestational diabetes mellitus (GDM) – A type of diabetes mellitus that develops only during pregnancy and usually disappears upon delivery, but increases the risk that the mother will develop diabetes later. GDM is managed with meal planning, activity and, in some cases, insulin.

Hyperglycemia – Also called high blood glucose. A condition in people with diabetes where blood glucose levels are too high. Symptoms include frequent urination, unusual thirst and weight loss.

Impaired fasting glucose (IFG) – A condition in which a blood glucose test, taken after an 8- to 12-hour fast, shows a level of glucose higher than normal but not high enough for a diagnosis of diabetes. IFG, also called pre-diabetes, is a level of 110 mg/dL to 125 mg/dL. Most people with pre-diabetes are at increased risk for developing type 2 diabetes.

Impaired glucose tolerance (IGT) – A condition in which blood glucose levels are higher than normal but are not high enough for a diagnosis of diabetes. IGT, also called prediabetes, is a level of 140 mg/dL to 199 mg/dL 2 hours after the start of an oral glucose tolerance test. Most people with pre-diabetes are at increased risk for developing type 2 diabetes. Other names for IGT that are no longer used are "borderline," "sub-clinical," "chemical "or" latent" diabetes.

Insulin – A hormone that helps the body use blood glucose for energy. The beta cells of the pancreas make insulin.

Ketones – Chemical substances the body produces when it does not have enough insulin in the blood. If ketones build up in the body, serious illness or a coma can result.

Lactic acidosis – When lactic acid builds up in the bloodstream faster than it can be removed. Lactic acid is produced when oxygen level in the body drop.

Lower extremity amputation – A surgically performed procedure to remove lower extremities of the body that have been affected by severe trauma or vascular disease.

Microalbuminuria – Small amounts of the protein called albumin in the urine detectable with a special lab test.

Onset – The beginning or start of a disease.

Pancreas – An organ that makes insulin and enzymes for digestion. The pancreas is located behind the lower part of the stomach and is about the size of a hand.

Perinatal mortality – Deaths that refer to fetal deaths and live births with only brief survival (days or weeks) and are grouped on the assumption that similar factors are associated with these losses.

Peripheral Vascular Disease (PVD) – A disease of the large blood vessels of the arms, legs, and feet. PVD may occur when major blood vessels in these areas are blocked and do not receive enough blood. The signs of PVD are aching pains and slow-healing foot sores.

Prevalence – The number of people in a given group or population who are reported to have a specific disease at any one point in time.

Prediabetes – A condition in which blood glucose levels are higher than normal but are not high enough for a diagnosis of diabetes. People with pre-diabetes are at increased risk for developing type 2 diabetes and for heart disease and stroke. Other names for prediabetes are impaired glucose tolerance and impaired fasting glucose.

Retinopathy – Eye disease that is caused by damage to the small blood vessels in the retina. Loss of vision may result.

Risk Factors – Characteristics of individuals that increase the probability that they will experience disease or death compared to the rest of the population. Risk factors for developing diabetes include genetics, environmental exposures, and socio-cultural living conditions. Risk factors for complications of diabetes include the same factors as above and more importantly, uncontrolled blood sugar, blood lipid or blood pressure levels.

Self-management Education – Instruction about nutrition, exercise, medications, blood sugar monitoring, and emotional adjustment to help people control their diabetes and make healthy lifestyle choices.

Social Determinants of Health – Circumstances in which people are born, grow up, live, work, and age, as well as the systems put in place to deal with illness. These circumstances are in turn shaped by a wider set of forces: economics, social policies, and politics.

Type 1 Diabetes – A condition characterized by high blood glucose levels caused by a total lack of insulin. Occurs when the body's immune system attacks the insulin-producing beta cells in the pancreas and destroys them. The pancreas then produces little or no insulin. Type 1 diabetes develops most often in young people but can appear in adults.

Type 2 Diabetes – A condition characterized by high blood glucose levels caused by either a lack of insulin or the body's inability to use insulin efficiently. Type 2 diabetes develops most often in middle-aged and older adults but can appear in young people.