

JOINT STATE GOVERNMENT COMMISSION

General Assembly of the Commonwealth of Pennsylvania

DIABETES IN PENNSYLVANIA:

**PREVENTION AND
MAINTENANCE PROGRAMS**

STAFF STUDY

MARCH 2018



*Serving the General Assembly of the
Commonwealth of Pennsylvania Since 1937*

REPORT

Diabetes in Pennsylvania: Prevention and Maintenance Programs

Project Staff:

Yelena P. Khanzhina, Ph.D., Public Policy Analyst
Wendy L. Baker, Executive Assistant

The report is also available on our website <http://jsg.legis.state.pa.us/publications.cfm>

JOINT STATE GOVERNMENT COMMISSION	
Room 108 Finance Building 613 North Street Harrisburg, PA 17120-0018	Telephone: 717-787-4397 Fax: 717-783-9380 E-mail: jntst02@legis.state.pa.us Website: http://jsg.legis.state.pa.us

The Joint State Government Commission was created in 1937 as the primary and central non-partisan, bicameral research and policy development agency for the General Assembly of Pennsylvania.¹

A fourteen-member Executive Committee comprised of the leadership of both the House of Representatives and the Senate oversees the Commission. The seven Executive Committee members from the House of Representatives are the Speaker, the Majority and Minority Leaders, the Majority and Minority Whips, and the Majority and Minority Caucus Chairs. The seven Executive Committee members from the Senate are the President Pro Tempore, the Majority and Minority Leaders, the Majority and Minority Whips, and the Majority and Minority Caucus Chairs. By statute, the Executive Committee selects a chairman of the Commission from among the members of the General Assembly. Historically, the Executive Committee has also selected a Vice-Chair or Treasurer, or both, for the Commission. There was also a Secretary during some years.

The studies conducted by the Commission are authorized by statute or by a simple or joint resolution. In general, the Commission has the power to conduct investigations, study issues, and gather information as directed by the General Assembly. The Commission provides in-depth research on a variety of topics, crafts recommendations to improve public policy and statutory law, and works closely with legislators and their staff.

A Commission study may involve the appointment of a legislative task force, composed of a specified number of legislators from the House of Representatives or the Senate, or both, as set forth in the enabling statute or resolution. In addition to following the progress of a particular study, the principal role of a task force is to determine whether to authorize the publication of any report resulting from the study and the introduction of any proposed legislation contained in the report. However, task force authorization does not necessarily reflect endorsement of all the findings and recommendations contained in a report.

Some studies involve an appointed advisory committee of professionals or interested parties from across the Commonwealth with expertise in a particular topic; others are managed exclusively by Commission staff with the informal involvement of representatives of those entities that can provide insight and information regarding the particular topic. When a study involves an advisory committee, the Commission seeks consensus among the members.² Although an advisory committee member may represent a particular department, agency, association, or group, such representation does not necessarily reflect the endorsement of the department, agency, association, or group of all the findings and recommendations published in a report.

¹ Act of July 1, 1937 (P.L.2460, No.459); (46 P.S. §§ 65 – 69).

² Consensus does not necessarily reflect unanimity among the advisory committee members on each individual policy or legislative recommendation. At a minimum, it reflects the views of a substantial majority of the advisory committee, gained after lengthy review and discussion.

Over the years, nearly one thousand individuals from across the Commonwealth have served as members of the Commission's numerous advisory committees or have assisted the Commission with its studies. Members of advisory committees bring a wide range of knowledge and experience to deliberations involving a particular study. Individuals from countless backgrounds have contributed to the work of the Commission, such as attorneys, judges, professors and other educators, state and local officials, physicians and other health care professionals, business and community leaders, service providers, administrators and other professionals, law enforcement personnel, and concerned citizens. In addition, members of advisory committees donate their time to serve the public good; they are not compensated for their service as members. Consequently, the Commonwealth of Pennsylvania receives the financial benefit of such volunteerism, along with the expertise in developing statutory language and public policy recommendations to improve the law in Pennsylvania.

The Commission periodically reports its findings and recommendations, along with any proposed legislation, to the General Assembly. Certain studies have specific timelines for the publication of a report, as in the case of a discrete or timely topic; other studies, given their complex or considerable nature, are ongoing and involve the publication of periodic reports. Completion of a study, or a particular aspect of an ongoing study, generally results in the publication of a report setting forth background material, policy recommendations, and proposed legislation. However, the release of a report by the Commission does not necessarily reflect the endorsement by the members of the Executive Committee, or the Chair or Vice-Chair of the Commission, of all the findings, recommendations, or conclusions contained in the report. A report containing proposed legislation may also contain official comments, which may be consulted to construe or apply "the original provisions of the statute".³

Since its inception, the Commission has published more than 350 reports on a sweeping range of topics, including administrative law and procedure; agriculture; athletics and sports; banks and banking; commerce and trade; the commercial code; crimes and offenses; decedents, estates, and fiduciaries; detectives and private police; domestic relations; education; elections; eminent domain; environmental resources; escheats; fish; forests, waters, and state parks; game; health and safety; historical sites and museums; insolvency and assignments; insurance; the judiciary and judicial procedure; labor; law and justice; the legislature; liquor; mechanics' liens; mental health; military affairs; mines and mining; municipalities; prisons and parole; procurement; state-licensed professions and occupations; public utilities; public welfare; real and personal property; state government; taxation and fiscal affairs; transportation; vehicles; and workers' compensation.

Following the completion of a report, subsequent action on the part of the Commission may be required, and, as necessary, the Commission will draft legislation and statutory amendments, update research, track legislation through the legislative process, attend hearings, and answer questions from legislators, legislative staff, interest groups, and constituents.

³ 1 Pa.C.S. § 1939.



General Assembly of the Commonwealth of Pennsylvania
JOINT STATE GOVERNMENT COMMISSION

Room 108 – Finance Building
Harrisburg, Pa 17120

Phone 717-787-4397 | Fax 717-783-9380

jntst02@legis.state.pa.us

March 12, 2018

REP. FLORINDO J. FABRIZIO
Chairman

SEN. JOHN C. RAFFERTY, JR.
Vice Chairman

EXECUTIVE COMMITTEE

Senate Members:

JOSEPH B. SCARNATI, III
President Pro Tempore

JACOB D. CORMAN, III
Majority Leader

JAY COSTA, JR.
Minority Leader

JOHN R. GORDNER
Majority Whip

ANTHONY H. WILLIAMS
Minority Whip

ROBERT B. MENSCH
Chair, Majority Caucus

WAYNE D. FONTANA
Chair, Minority Caucus

House Members:

MICHAEL C. TURZAI
Speaker

DAVID L. REED
Majority Leader

FRANK J. DERMODY
Minority Leader

BRYAN D. CUTLER
Majority Whip

MICHAEL K. HANNA
Minority Whip

MARCY TOEPEL
Chair, Majority Caucus

DAN B. FRANKEL
Chair, Minority Caucus

Administrative Staff:

GLENN J. PASEWICZ
Executive Director

YVONNE M. HURSH
Counsel

To the Members of the General Assembly of Pennsylvania:

This is the third of a series of reports by the Joint State Government Commission in response to the mandate of 2014 House Resolution 936 (Pr.'s No. 4098), which provides for an ongoing study of the public health problem posed by diabetes in Pennsylvania. The Commission's task is to describe, evaluate, and make recommendations to improve the Commonwealth's response.

This report describes the relevant programs run by the entities charged with implementing public health policy and with assisting persons with diabetes. The broad purposes of public health policies aimed at controlling diabetes and preventing the disease are "to reduce the incidence of diabetes, improve diabetes care, and control complications associated with diabetes."

Public health initiatives can assist the Commonwealth's residents to reduce the incidence of diabetes and to minimize its deadly effects. Educating the public about diabetes is a vital part of the strategy; public health authorities must give the public opportunities to make themselves aware of the measures they can take to avoid the disease and to take effective measures if they do fall victim to it. Similarly, such officials must be aware of which measures are most effective so that resources can be directed to optimize their impact.

We hope these reports will assist the Commonwealth in mounting a vigorous and effective response to this serious and growing public health problem.

Respectfully submitted,

Glenn J. Pasewicz
Executive Director

TABLE OF CONTENTS

INTRODUCTION: DIABETES AS A PUBLIC HEALTH PROBLEM	
NATIONWIDE AND IN PENNSYLVANIA	1
Incidence of Diabetes, Prediabetes, and Obesity in the United States and in Pennsylvania	1
Diabetes-Related Hospital Admissions in Pennsylvania	3
DIAGNOSIS AND CLASSIFICATION	
OF DIABETES MELLITUS	5
Definition and Description	5
Classification	6
New Developments in Diabetes Research and Therapeutic Approaches	7
DEPARTMENT OF HEALTH	15
Diabetes Prevention Program (DPP)	15
Diabetes Self-Management Education Program (DSME)	23
Juvenile Diabetes Cure Research Check-off Program	28
Obesity Prevention and Wellness Section Activities	29
DEPARTMENT OF AGING	35
Health & Wellness Program	35
Chronic Disease Self-Management Program	36
Diabetes Self-Management Program	38
PACE	40
DEPARTMENT OF HUMAN SERVICES	43
DIABETES IN SCHOOL CHILDREN	45
YMCA's DIABETES PREVENTION PROGRAM	53
PENNSYLVANIA DIABETIC EYE HEALTH ALLIANCE (PDEHA)	55
RECOMMENDATIONS	57
HOUSE RESOLUTION No. 936 of 2014	61

INTRODUCTION: DIABETES AS A PUBLIC HEALTH PROBLEM NATIONWIDE AND IN PENNSYLVANIA

This is the third of a series of reports by the Joint State Government Commission (JSGC) written in response to House Resolution No. 936 of 2014. HR 936 provides for an ongoing study of the public health problem posed by diabetes in Pennsylvania and directs the JSGC, in collaboration with certain other state departments and agencies, to describe, evaluate, and make recommendations for the Commonwealth's response. This report describes the relevant programs run by the entities charged with implementing public health policy and with assisting persons with diabetes. The broad purposes of public health policies aimed at controlling diabetes and preventing the disease are "to reduce the incidence of diabetes, improve diabetes care, and control complications associated with diabetes."⁴

Incidence of Diabetes, Prediabetes, and Obesity in the United States and in Pennsylvania

Diabetes remains a serious and growing public health problem causing great suffering to individuals affected by it and placing a major financial toll on the state or agency programs. As stated by the American Diabetes Association (ADA), "diabetes is growing at an epidemic rate in the United States."⁵ The incidence rates are formidable. *The National Diabetes Statistics Report, 2017* estimates that "30.3 million people of all ages – or 9.4% of the U.S. population – had diabetes in 2015."⁶ This total included 30.2 million adults aged 18 years or older (12.2 percent of all U.S. adults), of which 7.2 million (23.8 percent) were not aware of having diabetes or did not report it.⁷ The percentage of adults with diabetes increased with age, reaching a high of 25.2 percent among those ages 65 years or older.⁸

⁴ HR No. 936 of 2014.

⁵ American Diabetes Association. *The Burden of Diabetes in Pennsylvania*, <http://main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/pennsylvania.pdf> (accessed August 29, 2017).

⁶ Centers for Disease Control and Prevention. *National Diabetes Statistics Report, 2017*. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, 2017, <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf> (accessed November 29, 2017).

⁷ Ibid.

⁸ Ibid.

In addition, the *National Diabetes Statistics Report* includes an estimate of the U.S. adults aged 18 years or older who had prediabetes in 2015. This estimate, based on their fasting glucose or A1C level, was also very high: 84.1 million people (33.9 percent of U.S. adults, over one-third). The percentage of adults aged 65 or older who had prediabetes was even higher: nearly half of them (48.3 percent).⁹ These numbers are ominous as many of these people are likely to develop diabetes within several years. What makes this estimate even more troubling is that among adults with prediabetes, only 11.6 percent reported being told by a health professional that they had this condition.¹⁰ The implications are that, presumably, no preventive measures have been taken.

Equally alarming is the fact that nearly one in four adults who had diabetes – 7.2 million people – were unaware they had it.¹¹ If left untreated, diabetes causes significant damage and leads to serious and costly complications.

Diabetes was the seventh leading cause of death in the United States in 2015.¹²

The Centers for Disease Control and Prevention (CDC) show the trends in the age-adjusted prevalence of obesity and diagnosed diabetes among U.S. adults aged 18 years or older for the years 1994 through 2015. According to the CDC, the prevalence of obesity and the prevalence of diagnosed diabetes rose in all states. In 1994, all but two states had prevalence of obesity less than 18 percent and no state exceeded 22 percent. In 2015, no state had less than 18 percent and all but one exceeded 22 percent.¹³ The trend for diagnosed diabetes is similar: the trends indicate considerable growth. In 2015, for diagnosed diabetes, all states exceeded 6.0 percent; 27 of these exceeded 9.0 percent.¹⁴ The CDC data for 2015 place Pennsylvania in the medium-range group (7.5 percent to 8.9 percent) for age-adjusted percent of adults who have diagnosed diabetes, and in the highest range (>26.0 percent), (with the majority of other states), for age-adjusted percent of adults who are obese.¹⁵

The United States Diabetes Surveillance System indicates the age-adjusted percentage of adults with diabetes in Pennsylvania at 8.8 percent in 2015, and prior to that, at 9.6 percent in 2014 and at 8.7 percent in 2013.¹⁶

⁹ Ibid.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ United States Diabetes Surveillance System, Division of Diabetes Translation, Centers for Disease Control and Prevention. *Maps of Trends in Diagnosed Diabetes and Obesity*. April 2017, https://www.cdc.gov/diabetes/statistics/slides/maps_diabetesobesity_trends.pdf (accessed November 30, 2017).

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ United States Diabetes Surveillance System, Division of Diabetes Translation, Centers for Disease Control and Prevention. *Diagnosed Diabetes*, <https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html> (accessed September 7, 2017).

ADA offers the following statistics for Pennsylvania:

- Approximately 1,455,813 people in Pennsylvania, or 12.8 percent of the adult population, have diabetes.
- Of these, an estimated 325,000 have diabetes but don't know it, greatly increasing their health risk.
- In addition, 3,505,000 in Pennsylvania, 35.8 percent of the adult population, have prediabetes with blood glucose levels higher than normal but not yet high enough to be diagnosed as diabetes.
- Every year an estimated 71,000 people in Pennsylvania are diagnosed with diabetes.¹⁷

Total direct medical expenses for diagnosed and undiagnosed diabetes, prediabetes, and gestational diabetes in Pennsylvania were estimated at \$10.2 billion in 2012, with additional \$3.2 billion spent on indirect costs resulting from lost productivity due to diabetes.¹⁸

At the state and federal levels, a lot of effort is put into diabetes treatment and prevention. According to ADA, in 2015, the National Institute of Diabetes and Digestive and Kidney Diseases at the National Institutes of Health invested \$111,205,293 in diabetes-related projects in Pennsylvania. In 2016, the Division of Diabetes Translation at the CDC spent \$2,409,984 on diabetes prevention and education programs in the Commonwealth.¹⁹

Diabetes-Related Hospital Admissions in Pennsylvania

An important indicator of the quality of care provided to Pennsylvania residents with diabetes is the number of diabetes-related hospital admissions. It is, in part, a reflection of primary care access or outpatient services. The Pennsylvania Health Care Cost Containment Council (PHC4), an independent state agency charged with collecting, analyzing, and reporting information that can be used to improve the quality and restrain the cost of health care in the Commonwealth, recently released a research brief that focuses on hospital admissions for patients whose principal reason for admissions was diabetes. PHC4 justly maintains that “timely diagnosis, effective primary care and appropriate disease management can potentially prevent the need for diabetes hospitalizations.”²⁰

PHC4's brief lists the number of hospital admissions for diabetes in 2016 at 24,283.²¹ It is 13 percent higher than in 2000, but it has remained fairly steady in the past ten years.²² Between 2000 and 2016, there was a 38 percent increase in the rate of hospital admissions for Pennsylvanians under age 45 and a 12 percent decrease for residents aged 45 and older, although this age group still had higher overall rates.²³

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Pennsylvania Health Care Cost Containment Council. *Pennsylvania Hospital Admissions for Diabetes*. Harrisburg, PA. November, 2017, http://www.phc4.org/reports/researchbriefs/diabetes/16/docs/researchbrief_diabetes2016.pdf (accessed December 5, 2017).

²¹ Ibid.

²² Ibid.

²³ Ibid.

In the national context, Pennsylvania appears to be close to the average though slightly higher: in 2014 (the most recent US data available), the hospitalization rate for diabetes in the Commonwealth was 18.7 percent per 10,000 residents compared to 17.4 percent per 10,000 for the nation.²⁴ Over 5 percent of the patients had multiple hospitalizations for diabetes in 2016; they were admitted three or more times.²⁵ According to PHC4, in 2016, “diabetes admissions amounted to an estimated \$205 million in hospital payments.”²⁶

Type 1 diabetes accounted for 29 percent of hospitalizations; type 2 diabetes accounted for 58 percent, and about 13 percent of the diabetes hospitalizations in 2016 were for other types of diabetes.²⁷

Diabetes hospitalizations for patients less than 18 years of age were slightly down in 2016 (1,297) compared to 2000 (1,364).²⁸

Population-based data showed higher rates of diabetes hospitalizations among black and lower-income residents. According to PHC4 calculations, in 2016, statewide, there were 19.0 hospital admissions for diabetes per 10,000 Pennsylvania residents; for black (non-Hispanic) residents, the rate 46.0 per 10,000 while for white (non-Hispanic) and Hispanic residents the rates were 16.1 and 13.7, respectively, and for lower-income residents of all races, the rate was 41.7 per 10,000 – significantly higher than the average.²⁹ Hospitalization rate was slightly higher for males than for females: 21.6 and 16.5, respectively.³⁰

Some of the serious complications of diabetes affect the lower extremities, which may lead to amputations. Between 2000 and 2006, almost 40,000 Pennsylvania residents with diabetes underwent a lower extremity amputation – “an average of 2,304 per year,” with the rate of amputation staying the same in 2016 as it was in 2000.³¹

PHC4 researchers utilized a set of Prevention Quality Indicators developed by the Agency for Healthcare Research and Quality (AHRQ) and determined that 86 percent of adult diabetes hospital admissions were “potentially preventable” in 2016.³² This high number, undoubtedly, deserves most serious attention and continued analysis: if such a high percentage of diabetes hospitalizations could, indeed, be prevented, it strongly highlights the need to focus on better maintenance and more prompt and thorough outpatient care.

PNC4 analysis of hospital admissions for diabetes reveals a number of areas that should become the center of attention for better management and control of this chronic disease.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

³² Ibid.

DIAGNOSIS AND CLASSIFICATION OF DIABETES MELLITUS

Definition and Description

Diabetes mellitus is defined as “a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both.”³³ In layman’s terms, diabetes arises when either the pancreas does not make enough insulin (type 1), or the body cannot respond to the insulin that is made (type 2). Consequently, the body cannot use glucose (sugar), which is the main source of energy for the body’s cells.³⁴

Diabetes develops as a result of several pathogenic processes, ranging from autoimmune destruction of the beta-cells of the pancreas with consequent insulin deficiency to abnormalities that result in resistance to insulin action. “Deficient insulin action results from inadequate insulin secretion and/or diminished tissue responses to insulin at one or more points in the complex pathways of hormone action. Impairment of insulin secretion and defects in insulin action frequently coexist in the same patient, and it is often unclear which abnormality, if either alone, is the primary cause of the hyperglycemia.”³⁵

Acute, life-threatening consequences of uncontrolled diabetes are hyperglycemia with ketoacidosis or the nonketotic hyperosmolar syndrome.³⁶ Hypoglycemia (abnormally low level of blood sugar), which is often associated with diabetes and its treatment, can also lead to severe consequences and can sometimes be life-threatening as it is a potential cause of acute cardiovascular events.

The chronic hyperglycemia of diabetes (abnormally high level of blood sugar) is associated with long-term damage, dysfunction, and failure of different organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Long-term complications of diabetes include retinopathy with potential loss of vision; neuropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers and amputations; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial, and cerebrovascular disease.³⁷

³³ American Diabetes Association. *Diagnosis and Classification of Diabetes Mellitus*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2797383> (accessed December 18, 2017).

³⁴ KidsHealth.org website, “Dictionary, Diabetes Mellitus,” The Nemours Foundation, <https://kidshealth.org/en/parents/diabetes-mellitus.html> (accessed March 4, 2018).

³⁵ Ibid.

³⁶ Ibid.

³⁷ Ibid.

Classification

Diabetes is currently classified into the following general categories:

1. Type 1 diabetes (due to autoimmune beta-cell destruction, usually leading to absolute insulin deficiency)
2. Type 2 diabetes (due to a progressive loss of beta-cell insulin secretion frequently on the background of insulin resistance)
3. Gestational diabetes mellitus (GDM) (diabetes diagnosed in the second or third trimester of pregnancy that was not clearly overt diabetes prior to gestation)
4. Specific types of diabetes due to other causes, for example, monogenic diabetes syndromes (such as neonatal diabetes and maturity-onset diabetes of the young [MODY]), diseases of the exocrine pancreas (such as cystic fibrosis) and drug- or chemical-induced diabetes (such as with glucocorticoid use, in the treatment of HIV/AIDS, or after organ transplantation)³⁸

Most common forms of diabetes are type 1 diabetes and type 2 diabetes. Ongoing research has recognized that clinical presentation and progression of these heterogeneous diseases vary significantly; it has also led to reconsideration of certain traditional paradigms and suggested a new framework for future studies and regulatory decision making. One of the recent developments is the acknowledgement that “the traditional paradigms of type 2 diabetes only in adults and type 1 diabetes only in children are no longer accurate, as both diseases occur in both cohorts.”³⁹

Type 1 diabetes, previously called “insulin-dependent diabetes” or “juvenile-onset diabetes,” accounts for 5-10 percent of diabetes and is due to cellular mediated-autoimmune destruction of the pancreatic β -cells; it is identified by the presence of one or more specific autoimmune markers.⁴⁰ This form of diabetes commonly occurs in childhood and adolescence, but, as has been recently acknowledged, it may occur at any age. The SEARCH for Diabetes in Youth (SERACH) study, initiated in 2000, established a significant increase in prevalence of type 1 diabetes in youth in most racial/ethnic and age groups in the first decade of the twenty-first century: by over 20 percent between 2001 and 2009.⁴¹ It can be expected that antibody testing in relatives of those with type 1 diabetes, combined with education about diabetes symptoms and close follow-up, may enable earlier identification of type 1 diabetes onset.⁴² That would be beneficial as patients with this form of diabetes are often diagnosed only when they already have acute symptoms of the disease, significantly elevated blood glucose level, and in many case, life-

³⁸ American Diabetes Association. “Classification and Diagnosis of Diabetes.” *Diabetes Care*, Vol. 40 (Supplement 1), January 2017, <https://doi.org/10.2337/dc17-S005> (accessed December 18, 2017).

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Hamman, Richard F. et al. “The SEARCH for Diabetes in Youth Study: Rationale, Findings, and Future Directions.” *Diabetes Care*, Vol. 37, December 2014, <https://doi.org/10.2337/dc-0574> (accessed January 11, 2018).

⁴² American Diabetes Association. “Classification and Diagnosis of Diabetes.” *Diabetes Care*, Vol. 40 (Supplement 1), January 2017, <https://doi.org/10.2337/dc17-S005> (accessed December 18, 2017).

threatening ketoacidosis. Antibody testing for risk assessment in the setting of a clinical research study can be considered for individuals who have relatives with type 1 diabetes. Presently, various methods of preventing type 1 diabetes in those with evidence of autoimmunity are being tested in numerous clinical studies.⁴³

Type 2 diabetes, previously referred to as “noninsulin-dependent diabetes” or “adult-onset diabetes,” accounts for 90-95 percent of all diabetes; this form “encompasses individuals who have relative (rather than absolute) insulin deficiency and have peripheral insulin resistance.”⁴⁴ There are various causes of type 2 diabetes. It is often associated with a strong genetic predisposition, and the risk of developing this form of diabetes increases with age, obesity, and lack of physical activity. There are also other known risk factors. Type 2 diabetes often remains undiagnosed for many years because hyperglycemia develops gradually and, at earlier stages, is not severe enough for the patient to recognize the classic diabetes symptoms. As “even undiagnosed patients are at increased risk of developing macrovascular and microvascular complications” and as the “duration of glycemic burden is a strong predictor of adverse outcomes,” the American Diabetes Association (ADA) strongly recommends early detection and early intervention, underscoring the availability of simple tests to detect preclinical disease and the existence of effective interventions that prevent progression from prediabetes to diabetes and reduce the risk of diabetes complications.⁴⁵ To fortify its recommendations for the early detection and treatment of type 2 diabetes, ADA cites computer simulation model studies suggesting that “major benefits are likely to accrue from the early diagnosis and treatment of hyperglycemia and cardiovascular risk factors in type 2 diabetes,” and, “moreover, screening, beginning at age 30 or 45 years and independent of risk factors, may be cost-effective (<\$11,000 per quality-adjusted life-year gained).”⁴⁶

New Developments in Diabetes Research and Therapeutic Approaches

In October 2015, the American Diabetes Association (ADA), the Juvenile Diabetes Research Foundation (JDRF), the European Association for the Study of Diabetes, and the American Association of Clinical Endocrinologists convened the Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis Research Symposium. International experts in genetics, immunology, metabolism, endocrinology, and system biology discussed genetic and environmental determinants of type 1 and type 2 diabetes risk and progression, as well as complications, and debated how to determine appropriate therapeutic approaches based on disease pathophysiology and stage and how to address remaining research gaps hindering a personalized medical approach to diabetes.⁴⁷

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Skyler, Jay S. et al. “Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis.” *Diabetes*, Vol. 66(2), February 2017, <https://doi.org/10.2337/db16-0806> (accessed December 8, 2017).

The participants observed that although therapeutic guidelines for diabetes encourage individualization of approaches, guidelines are often broadly applied in treatment and reimbursement decisions in a way that reinforces the “one-size-fits-all” approach. Citing success of individualized approaches in cancer treatment, where better insights into the pathophysiology of different types of cancer have led to tailored diagnostic tools and therapies, which have dramatically improved outcomes, the symposium participants recommended a similar approach for diabetes. They surmised that if individualized approaches improve morbidity/mortality and are cost-effective, health care systems can be persuaded to adopt them.⁴⁸

Current consensus among diabetes researchers is that the progressive loss of beta-cell mass and/or function that clinically manifests as hyperglycemia can be driven by a variety of genetic and environmental factors. Once hyperglycemia occurs, however, people with all forms of diabetes are at risk for developing the same complications, though rates of progression may differ. The 2015 symposium concluded that “the present challenge is to characterize the many paths to β -cell dysfunction or demise and identify therapeutic approaches that best target each path. . . . A personalized approach to intensive therapy to prevent or treat specific complications may help resolve the burden of diabetic complications, particularly in those at highest risk.”⁴⁹

In spite of the known genetic associations with diabetes risks and the significant recent strides in genetic research, experts agree that “the field is not yet at a place where genetics has provided actionable information to guide treatment decisions, with a few notable exceptions, namely in MODY.”⁵⁰ In the future, increasingly accessible and affordable technologies should lead to better understanding of how genetic variations affect the rate of progression of diabetes and its complications. Determining categorical phenotypic subtypes of diabetes and linking specific genetic associations to these phenotypic subtypes would allow for developing “the tools to predict response to – and side effects of – therapeutic approaches for diabetes in patient populations.”⁵¹

The international symposium confirmed that “despite the genetic underpinnings of the diseases, the prevalence of both type 1 and type 2 diabetes is increasing globally at a rate that outpaces genetic variation, suggesting that environmental factors also play a key role in both types of diabetes.”⁵² Common environmental factors, including dietary factors, endocrine disruptors and other environmental pollutants, are associated with type 1 and type 2 diabetes, and “conversely, islet autoimmunity associated with possible environmental triggers (e.g., diet, infection) may have a role in a subset of people diagnosed with type 2 diabetes.”⁵³ The assembled experts emphasized the gene-environment interaction.

It is generally acknowledged that, regardless of the particular pathophysiology of an individual’s diabetes, the unifying characteristic of the vast majority of diabetes is hyperglycemia resulting from beta-cell destruction or dysfunction. As insulin insufficiency increases over time, it

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid.

causes progressive dysglycemia.⁵⁴ Accordingly, one of the conclusions reached by the symposium is that “understanding the natural history related to β -cell mass and function is key to staging the diseases and identifying where and how intervention can best be made to prevent or delay disease progression and complications.”⁵⁵

One of the current trends in understanding diabetes and approaches to treatment is the acknowledgement of significant overlap across the spectrum of diabetes. Symposium participants consistently underscored that while type 1 results from immune-mediated destruction of beta-cells and type 2 diabetes is primarily associated with glucose-specific insulin secretory defects, “an insufficient number or functional decline of β -cells is central to hyperglycemia and the downstream complications of diabetes.”⁵⁶ Understanding the state of beta-cells was determined to be key to defining subtypes of diabetes.

Several conclusions endorsed by the latest international symposium are of particular importance for the establishment of new clinical strategies and implementation of programs aimed at diabetes maintenance and prevention, especially as regards type 2, which accounts for the vast majority of cases. It is well known that while prediabetes and diabetes are diagnosed by absolute thresholds, dysglycemia is a continuum progressing from normal to overt diabetes. In the past few years, multiple researchers and clinicians have been pushing for new approaches, bemoaning clinical inertia⁵⁷ and arguing that early detection and intervention can change the natural history of type 2 diabetes.⁵⁸ Based on the evidence from trials where lifestyle change and/or glucose-lowering medications decreased progression from prediabetes to diabetes, experts advocate for earlier detection and more effective treatment: “If we found prediabetes and early diabetes when they first present and treated them more effectively, we could prevent or delay the progression of hyperglycemia and the development of complications.”⁵⁹ Findings from randomized controlled studies conducted in several countries “indicate that we can change the natural history through routine screening to find prediabetes and early diabetes, combined with management aimed to keep glucose levels as close to normal as possible, without hypoglycemia.”⁶⁰ Evidence proves that “early screening offers a window for treatment that may prevent or delay progression of the disease and its complications”; clinical benefits of early therapy have been clearly demonstrated, with

⁵⁴ “Dysglycemia” is a broad term that refers to abnormal blood glucose levels from any cause which results from a disorder of blood sugar metabolism.

⁵⁵ Skyler, Jay S. et al. “Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis.” *Diabetes*, Vol. 66(2), February 2017, <https://doi.org/10.2337/db16-0806> (accessed December 8, 2017).

⁵⁶ Ibid.

⁵⁷ Strain, W.D. et al. “Time to Do More: Addressing Clinical Inertia in the Management of Type 2 Diabetes Mellitus.” *Diabetes Research and Clinical Practice*. Vol. 105. 2014, https://ac.els-cdn.com/S0168822714002198/1-s2.0-S0168822714002198-main.pdf?_tid=f63f0eb0-f243-11e7-93d0-00000aab0f01&acdnat=1515176117_9402946a6cca75097fad93f4cf823381 (accessed January 5, 2018).

⁵⁸ Phillips, Lawrence S., Ratner, Robert E., Buse, John B., and Steven E. Kahn. “We Can Change the Natural History of Type 2 Diabetes.” *Diabetes Care*. Vol. 37, October 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4170125/pdf/2668.pdf> (DOI: 10.2337/dc14-0817).

See also Bergman, M., Dankner, R., Roth, J. and K.M. Narayan. “Are Current Diagnostic Guidelines Delaying Early Detection of Dysglycemic States? Time for New Approaches.” *Endocrine*. Vol. 44 (1). August 2013, doi: 10.1007/s12020-013-9873-6 (accessed January 5, 2017).

⁵⁹ Phillips, Lawrence S., Ratner, Robert E., Buse, John B., and Steven E. Kahn. Op. cit.

⁶⁰ Ibid.

reductions in retinopathy as well as cardiovascular and all-cause mortality.⁶¹ These findings should spur changes in healthcare, insurance, and public policy approaches to diabetes; such changes would benefit the health of numerous individuals suffering from diabetes and might also benefit healthcare systems and society in general by reducing costs associated with diabetes and its complications.

Based on multiple international studies demonstrating the importance of early intervention and good management in early stages of the disease, researchers unequivocally recommend that “policy-makers should focus strategies on prevention and early diagnosis/intervention.”⁶²

Healthy People 2020 that summarizes goals and objectives developed by the Office of Disease Prevention and Health Promotion (ODPHP) and includes reducing the disease burden of diabetes and improving the quality of life for all persons who have, or are at risk for, diabetes as one of the nation’s health improvement priorities, identifies four “transition points” in the natural history of diabetes health care that provide opportunities to reduce the health and economic burden of diabetes mellitus:

- Primary prevention: Movement from no diabetes to diabetes
- Testing and early diagnosis: Movement from unrecognized to recognized diabetes
- Access to care for all persons with diabetes: Movement from no diabetes care to access to appropriate diabetes care
- Improved quality of care: Movement from inadequate to adequate care.⁶³

The experts assembled at the 2015 international symposium highlighted a lack of “clear understanding of the ideal approaches to selecting appropriate treatment regimens for particular individuals” and the need “to develop a more personalized approach to diabetes management.”⁶⁴

Among research areas selected as those to be addressed immediately is performing clinical trials in vulnerable and understudied populations, such as the elderly and children. Such trials are “critical to validate more precise evidence-based treatments to these populations.”⁶⁵ A recent extensive survey of patients and providers spanning six countries confirmed that “despite acknowledging differences in compliance, tolerability and the overall disease between middle age and older people with diabetes, the treatment protocols applied to both age groups appeared very similar, suggesting that, despite fundamental differences in the physiology and the nature of disease, all people with diabetes were treated the same.”⁶⁶ The one-size-fits-all approach needs to

⁶¹ Skyler, Jay S. et al. “Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis.” *Diabetes*, Vol. 66(2), February 2017, <https://doi.org/10.2337/db16-0806> (accessed December 8, 2017).

⁶² Strain, W.D. et al. Op. cit.

⁶³ *Healthy People 2020: Diabetes*, <https://www.healthypeople.gov/2020/topics-objectives/topic/diabetes> (accessed January 29, 2018).

⁶⁴ Skyler, Jay S. et al. “Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis.” *Diabetes*, Vol. 66(2), February 2017, <https://doi.org/10.2337/db16-0806> (accessed December 8, 2017).

⁶⁵ Ibid.

⁶⁶ Strain, W.D. et al. “Time to Do More: Addressing Clinical Inertia in the Management of Type 2 Diabetes Mellitus.” *Diabetes Research and Clinical Practice*. Vol. 105. 2014, https://ac.els-cdn.com/S0168822714002198/1-s2.0-S0168822714002198-main.pdf?_tid=f63f0eb0-f243-11e7-93d0-00000aab0f01&acdnat=1515176117_9402946a6cca75097fad93f4cf823381 (accessed January 5, 2018).

change as there are clear indicators that individualized treatment targets for older patients and age-appropriate management improves outcomes.⁶⁷ Though individualizing therapeutic approaches is especially critical for this category of patients, personalized treatment is important for all people with diabetes. A growing number of diabetes researchers and practitioners note with satisfaction that “a paradigm shift is already occurring as diabetes management begins to move away from universal algorithms where one pathway was expected to govern treatment strategies for all patients irrespective of their baseline characteristics” and recommend individualizing approaches on the basis of a variety of factors as well as integration of more personalized priorities.⁶⁸

One of the focal areas is identifying subtypes of diabetes within the current broad classification types. Recent studies in Sweden and Finland reporting five distinct subtypes of diabetes on the basis of clustering of clinical, blood-based, and genetic information in newly diagnosed patients are perceived as representing a promising approach that could lead to “developing meaningful classifications based on clinical characteristics, demographics, and novel biomarkers for disease risk, progression, and complications in discreet populations.”⁶⁹ True precision medicine for people with diabetes remains a goal.

Every year, the American Diabetes Association releases “The Standards of Medical Care in Diabetes.” This document, produced by the ADA’s multidisciplinary Professional Practice Committee, reflects the latest advances in the field and offers updated recommendations intended to improve the care of people with diabetes. To grade the quality of scientific evidence used to support its recommendations, ADA developed a classification system to clarify and codify the evidence cited as the basis for its guidelines. The quality of this evidence has been consistently improving over the past ten years.⁷⁰

“The Standards of Medical Care in Diabetes – 2017” emphasizes lifestyle management and psychological health, access to care, expanded and personalized treatment options, and the tracking of hypoglycemia.⁷¹ The 2017 “Standards” also include the findings of a new report on diabetes staging, titled “Differentiation of Diabetes by Pathophysiology, Natural History and Prognosis” and produced by a joint symposium of the American Diabetes Association, the European Association for the Study of Diabetes, and the American Association of Clinical Endocrinologists. Describing the critical, new evidence-based additions to the “Standards – 2017,” the ADA’s Chief Scientific and Medical Officer Robert E. Ratner said, “Together, the new Standards and the Differentiation report will guide health care providers and patients around the world in a multidisciplinary approach to provide a comprehensive, individualized diabetes care plan – a plan that accounts for the whole patient and the many variables that can impact their ability to successfully manage diabetes, and this leads to improved health outcomes.”⁷² The latter – a holistic,

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Skyler, Jay S. et al. “Differentiation of Diabetes by Pathophysiology, Natural History, and Prognosis.” *Diabetes*, Vol. 66(2), February 2017, <https://doi.org/10.2337/db16-0806> (accessed December 8, 2017).

⁷⁰ American Diabetes Association. “Standards of Medical Care in Diabetes -- 2017.” *Diabetes Care*. Vol. 40 (Suppl. 1), January 2017, http://care.diabetesjournals.org/content/40/Supplement_1/S4.full.print (accessed September 7, 2017).

⁷¹ Ibid.

⁷² *American Diabetes Association Releases 2017 Standards of Medical Care in Diabetes*, <http://www.diabetes.org/newsroom/press-releases/2016/american-diabetes-2017-standards-of-care.html> (accessed

individualized approach to treatment – has been recognized as one of the key points of the 2017 “Standards.” Jay Shubrook, Chair of the American Diabetes Association's Primary Care Advisory Group, also underscored it in his review: “The 2017 Standards of Care discuss a more global assessment of the person with diabetes, balancing individualization of treatment with population health. This includes a discussion of care systems and a focus on the environmental and system factors contributing to diabetes. Health literacy, numeracy, and social determinants of health are all important factors to assess.”⁷³

The 2017 “Standards of Care” highlighted improving outcomes and reducing disparities in populations with diabetes; described screening approaches and provided an example of a validated tool to screen for diabetes and previously undiagnosed type 2 diabetes; emphasized the importance of assessing comorbidities in the context of a patient-centered comprehensive evaluation; clinically significant hypoglycemia was redefined, and recommendations regarding metabolic surgery have been substantially changed. New pharmacologic approaches to glycemic treatment have been proposed.

Among the newly added sections were the discussion of recent evidence on screening for diabetes in dental practice, the description of the goals of provider-patient communication, a new section on post-transplantation diabetes mellitus, and specific recommendations for the treatment of neuropathic pain and the benefits of specialized therapeutic footwear for patients at high risk for foot problems.

The lifestyle management section was substantially revised, with new recommendations added, including a recommendation to interrupt prolonged sitting every thirty minutes with short bouts of physical activity.⁷⁴

One of the focal areas of the 2017 “Standards of Care” is psychological health. “Due to the greater risk of psychological/emotional stress and disorders in people with diabetes, the 2017 Standards include guidelines on screening adults and youth for diabetes distress (unique emotional issues related to the burdens and worries of living with diabetes), depression, anxiety and eating disorders”; the Standards also provide a list of situations and circumstances that warrant a referral to a mental health specialist.⁷⁵

The 2018 edition of the ADA’s “Standards of Medical Care in Diabetes” contains new recommendations in the area of “cardiovascular disease risk management including hypertension; an updated care algorithm that is patient-focused; the integration of new technology into diabetes management; and routine screening for type 2 diabetes in high-risk youth (BMI >85th percentile

December 20, 2017).

⁷³ Shubrook, Jay. *What Is New in the 2017 American Diabetes Association Standards of Care?*, <https://diabetes.medicinematters.com/guidelines/diagnosis/what-is-new-in-the-2017-american-diabetes-association-standards-of-care> (accessed September 7, 2017).

⁷⁴ American Diabetes Association. “Standards of Medical Care in Diabetes -- 2017.” *Diabetes Care*. Vol. 40 (Suppl. 1), January 2017, http://care.diabetesjournals.org/content/40/Supplement_1/S4.full.print (accessed September 7, 2017).

⁷⁵ *American Diabetes Association Releases 2017 Standards of Medical Care in Diabetes*, <http://www.diabetes.org/newsroom/press-releases/2016/american-diabetes-2017-standards-of-care.html> (accessed December 20, 2017).

plus at least one additional risk factor).⁷⁶ In its effort to provide the most up-to-date components of diabetes care, beginning in 2018, ADA will update and revise the online version of the “Standards of Care” throughout the year with necessary annotations regarding new evidence or regulatory changes that merit immediate incorporation.

New treatment recommendations for adults who have type 2 diabetes and vascular disease are based on the results of multiple cardiovascular outcome trials. These major, randomized controlled trials indicated a new pathway for people with heart disease and hypertension.

A new section was added describing emerging evidence that specific glucose-lowering medications delay the onset and progression of kidney disease.

Three new recommendations were added to highlight the importance of modified and individualized pharmacologic therapy for older adults with diabetes with the main purpose to reduce the risk of hypoglycemia and avoid overtreatment:

- Selection of medications with low risk of hypoglycemia
- Avoidance of over-treating diabetes, which is common in older adults
- Deintensification (or simplification) of complex regimens to reduce the risk of hypoglycemia, if it can be achieved within the individualized A1C target.⁷⁷

In the new edition of its “Standards of Medical Care,” ADA continues its ongoing pursuit of early diagnosis. Specifically, taking into account the growing rate of type 2 diabetes in children and youth, ADA is now recommending that clinicians consider risk-based screening for type 2 diabetes or prediabetes in asymptomatic children and adolescents who are overweight or obese and have one or more additional risk factors for diabetes, including

- Maternal history of diabetes or GDM during the child’s gestation
- Family history of type 2 diabetes in first- or second-degree relative
- Race/ethnicity (Native American, African American, Latino, Asian American, Pacific Islander)
- Signs of insulin-resistance or conditions associated with insulin resistance.⁷⁸

The “Standards of Medical Care - 2018” provide “the latest in comprehensive, evidence-based recommendations for the diagnosis and treatment of children and adults with type 1, type 2 or gestational diabetes, strategies to improve the prevention or delay of type 2 diabetes, and therapeutic approaches that reduce complications and positively affect health outcomes.”⁷⁹

⁷⁶ American Diabetes Association Releases 2018 Standards of Medical Care in Diabetes, with Notable New Recommendations for People with Cardiovascular Disease and Diabetes, <http://www.diabetes.org/newsroom/press-releases/2017/american-diabetes-association-2018-release-standards-of-medical-care-in-diabetes.html> (accessed January 12, 2018).

⁷⁷ American Diabetes Association. “Standards of Medical Care in Diabetes -- 2018.” *Diabetes Care*. Vol. 41 (Suppl. 1), January 2018, http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement_1.DC1/DC_41_S1_Combined.pdf (accessed January 12, 2018).

⁷⁸ Ibid.

⁷⁹ American Diabetes Association Releases 2018 Standards of Medical Care in Diabetes, with Notable New

Striving to provide screening, diagnostic, and therapeutic actions that can be expected to favorably affect health outcomes for patients with diabetes, ADA reminds its readers that its recommendations “are not intended to preclude clinical judgment and must be applied in context of excellent clinical care, with adjustments for individual preferences, comorbidities, and other patient factors.”⁸⁰ This reminder should be kept in mind as it is consonant with ADA’s recent emphasis on patient-centered, holistic care.

The 2018 “Standards” strongly recommend patient-centered care, increased awareness and screening for social determinants of health such as financial ability to afford medication, access to healthy foods, and community support.⁸¹

The 2018 “Standards of Medical Care in Diabetes” are based on the following inherent premises:

- Diabetes is a complex, chronic illness requiring continuous medical care with multifactorial risk-reduction strategies beyond glycemic control.
- Ongoing patient self-management education and support are critical to preventing acute complications and reducing the risk of long-term complications.
- Significant evidence exists that supports a range of interventions to improve diabetic outcomes.⁸²

These fundamental principles should guide policymakers as well as clinicians, patients, and insurers in their selection of interventions to improve diabetes outcomes.

Recommendations for People with Cardiovascular Disease and Diabetes, <http://www.diabetes.org/newsroom/press-releases/2017/american-diabetes-association-2018-release-standards-of-medical-care-in-diabetes.html> (accessed January 12, 2018).

⁸⁰ American Diabetes Association. “Standards of Medical Care in Diabetes -- 2018.” *Diabetes Care*. Vol. 41 (Suppl. 1), January 2018, http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement_1.DC1/DC_41_S1_Combined.pdf (accessed January 12, 2018).

⁸¹ *American Diabetes Association Releases 2018 Standards of Medical Care in Diabetes, with Notable New Recommendations for People with Cardiovascular Disease and Diabetes*, <http://www.diabetes.org/newsroom/press-releases/2017/american-diabetes-association-2018-release-standards-of-medical-care-in-diabetes.html> (accessed January 12, 2018).

⁸² American Diabetes Association. “Standards of Medical Care in Diabetes – 2018.” *Diabetes Care*. Vol. 41 (Suppl. 1), January 2018, http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement_1.DC1/DC_41_S1_Combined.pdf (accessed January 12, 2018).

DEPARTMENT OF HEALTH

Pennsylvania Department of Health (PADOH) is the leading agency in supervising programs aimed at prevention and management of diabetes. Most of the Commonwealth's diabetes programs are centralized within PADOH to ensure that statewide efforts are coordinated. PADOH works through Pennsylvania's healthcare system and coordinates its work with the other state departments, in particular the Office of Administration, to ensure diabetes prevention and management programs' coverage by the Pennsylvania Employees Benefit Trust Fund (PEBTF); the Department of Human Services Office of Medical Assistance Programs (OMAP) and Medicaid Managed Care Organizations, to collaborate on Diabetes Self-Management Education Program (DSME), and with the Department of Education, to offer recommendations and resources for the School Nurses Program.

This report will focus on three major programs currently administered by PADOH: Diabetes Prevention Program (DPP), Diabetes Self-Management Education Program (DSME), and Juvenile Diabetes Cure Research Tax Check-off Program. A brief overview of Obesity Prevention and Wellness Section activities is also included as obesity prevention efforts are closely connected with diabetes prevention and management.

Diabetes Prevention Program (DPP)

The Diabetes Prevention Program (DPP) is an evidence-based lifestyle change intervention program for preventing or delaying type 2 diabetes among people at high risk. It is a long-term, structured program. Participants, who have prediabetes or are at risk of developing type 2 diabetes, meet in groups with a specially trained lifestyle coach once a week for 6 months (core phase) and then once or twice a month for 6 months (post-core maintenance period) to learn ways to incorporate healthier eating and moderate physical activity as well as problem-solving and coping skills into their daily lives. The goals are to decrease each participant's weight by five to seven percent and to increase physical activity to 150 minutes per week.

Lifestyle changes have been shown to lower the risk of developing diabetes. The National Institute of Diabetes and Digestive and Kidney Diseases encourages people who have a high chance of developing type 2 diabetes to take steps to prevent or delay the onset of the disease by "losing a modest amount of weight by following a reduced-calorie eating plan and being physically active most days of the week."⁸³ A 15-year follow-up in the Diabetes Prevention Program Outcomes Study has confirmed that "lifestyle interventions or metformin significantly reduced

⁸³ National Institute of Diabetes and Digestive and Kidney Diseases. *Preventing Type 2 Diabetes*, <https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-type-2-diabetes> (accessed January 26, 2018).

diabetes development over 15 years”; specifically, during a mean follow-up of 15 years, diabetes incidence was reduced by 27 percent in the lifestyle intervention group and by 18 percent in the metformin group, compared with the placebo group, with declining between-group difference over time.⁸⁴ The result, thus, unequivocally supports the importance of diabetes prevention.

CDC’s Division of Diabetes Translation (DDT) funds state and local health departments to support programs and activities aimed at preventing or delaying the onset of type 2 diabetes and improving health outcomes for people diagnosed with diabetes. CDC’s funding and activities are part of two multi-program cooperative agreements: State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors, and Promote School Health Cooperative Agreement (1305) and State and Local Public Health Actions to Prevent Obesity, Diabetes, and Heart Disease and Stroke (1422).⁸⁵

States use 1305 funding to implement activities in four focus areas, called domains. The four domains of chronic disease prevention are as follows:⁸⁶

Four Domains of Chronic Disease Prevention Cooperative Agreement (1305)	
Domain	Purpose
1. Epidemiology and Surveillance	Monitor trends and track progress.
2. Environmental Approaches	Change policies and physical surroundings to reinforce healthful behaviors and expand access to healthy choices.
3. Health Care System Interventions	Improve the effective delivery and use of clinical and other high-value preventive services.
4. Community Programs Linked to Clinical Services	Help patients prevent and manage chronic diseases, with guidance from their health care providers.

⁸⁴ Diabetes Prevention Program Research Group. “Long-Term Effects of Lifestyle Intervention or Metformin on Diabetes Development and Microvascular Complications over 15-year Follow-up: The Diabetes Prevention Program Outcomes Study.” *The Lancet Diabetes & Endocrinology*. Vol. 3. No. 11. November 2015, DOI: [http://dx.doi.org/10.1016/S2213-8587\(15\)00291-0](http://dx.doi.org/10.1016/S2213-8587(15)00291-0) (accessed January 26, 2018).

⁸⁵ Centers for Disease Prevention and Control. *CDC’s Funded State & Local Programs to Address Diabetes*, <https://www.cdc.gov/diabetes/programs/stateandlocal/cdcfunded.html> (accessed January 25, 2018).

⁸⁶ *Ibid.*

Under “State Public Health Actions – 1305”, CDC addresses activities aimed at diabetes prevention and control with an emphasis on two of the four domains - supporting healthcare system interventions such as increased implementation of quality improvement processes and increased use of team-based care in health systems (Domain 3) and community programs linked to clinical services (Domain 4):

- Increase use of diabetes and other chronic disease self-management programs in community settings.
- Increase participation in CDC-recognized programs under the National Diabetes Prevention program (National DPP) to prevent or delay the onset of type 2 diabetes in those with prediabetes.
- Increase use of health-care extenders (such as community health workers or pharmacists) in the community in support of self-management of high blood pressure and diabetes.⁸⁷

The Pennsylvania Department of Health is supporting the implementation of the CDC National Diabetes Prevention Program by facilitating applications submissions and working to increase the number of CDC-recognized lifestyle change programs available for adults with prediabetes or at risk for developing type 2 diabetes in Pennsylvania.⁸⁸

Diabetes Prevention Program (DPP) work in the Commonwealth is completed under three funding sources:

- State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (DP13-1305), also known as LiveHealthyPA Grant
- Preventative Health and Health Services Block Grant, also referred to as Block Grant
- State Funding

State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (DP13-1305), also known as LiveHealthyPA Grant

Funding for DPP-SFY 2016-2017 - \$159,297.76

This is a 5-year grant that ends June 2018; a new grant opportunity is expected but not assured.

This grant is provided by the CDC’s National Center for Chronic Disease Prevention and Health Promotion with the goal to support a coordinated approach of strategies that focus on modifiable risk factors and multiple chronic conditions. The state’s role in chronic disease

⁸⁷ Ibid.

⁸⁸ The following section of the report is largely based on the information provided to the Joint State Government Commission by the Department of Health in the personal e-mail from Ms. Barbara Orwan, Public Health Program Administrator, PADOH Bureau of Health Promotion and Risk Reduction, on November 22, 2017.

prevention is more important than ever. The state is being funded to tackle diabetes, heart disease, obesity, and associated risk factors that are (or contribute to) the leading causes of premature death and disability in the United States.

DPP initiatives funded by this grant were guided by four drivers:

1. CDC-recognized lifestyle change programs;
2. Payors/payment mechanisms;
3. Screenings and referrals policies; and
4. Persons with prediabetes or at-risk for type 2 diabetes willing to attend lifestyle change programs.

During SFY 2016-2017, the Pennsylvania Department of Health engaged multiple stakeholders including Regional Primary Contractors (RPCs) and DPP providers. RPCs focused efforts on improving access to DPP and conducted outreach to prospective sites across the Commonwealth. Community-based organizations, health care providers, and health care systems received technical assistance in the Diabetes Prevention and Control Recognition Program (DPRP) application process, DPP participant recruitment, and program sustainability. Stakeholders provided feedback to the Pennsylvania Department of Health on the barriers and facilitators to successful DPP implementation.

In 2017, Quality Insights (QI) continued to work with 124 health systems and 163 practices by providing technical assistance to them and their electronic health record vendors to set up systems for prediabetes screenings and lifestyle change program referral prompts. By the end of SFY 2016-2017, 34 practices and 25 health systems had adopted policies or practices to refer a patient with prediabetes or at high risk to a CDC-recognized lifestyle change program. Health Promotion Council (HPC) is developing a DPP directory of available programs based on practice or health system location.

Through partnership with the Health Promotion Council (HPC), PADOH has disseminated and discussed the Physician Fee Schedule for 2017 which includes coverage parameters for DPP with the Medicaid MCO Workgroup. These discussions have facilitated AmeriHealth Caritas's decision to enter into a collaborative pilot to support payment for their members to participate in DPP in their Northeast and Central coverage area. The MCO workgroup is currently developing a member education toolkit similar to the provider education toolkit to provide diabetes educational materials and DSME/DPP resources.

PADOH continues to utilize existing partner infrastructure to increase DPP access across the state. By July 2017, there were 54 PADOH-partner DPP sites in Pennsylvania, and PADOH facilitated eight Lifestyle Coach trainings in state fiscal year (SFY) 2017. PADOH-partner sites are located in 37 of Pennsylvania's 67 counties. In SFY 2017, there were 783 enrolled DPP participants at PADOH-partner sites. RPCs have reported collaborations between DPP programs and tobacco cessation programs, women's health programs, and WIC/nutrition services.

The Diabetes Prevention Recognition Program (DPRP) report issued in July 2017 summarizes the Commonwealth achievements in the following way:

- There were 66 recognized organizations in Pennsylvania.
- 2,068 Pennsylvanians participated in DPRP-recognized lifestyle change programs. 383 participants completed the program.
- 1,022 participants enrolled in programs based on blood-based or gestational diabetes mellitus (GDM) diagnoses [49.4 percent of all enrolled participants].
- Average percent of weight loss among completers was 5.5 percent.

Preventative Health and Health Services Block Grant (Block Grant)

Funding for DPP-SFY 2016-2017 - \$915,000

The block grant is issued in two-year increments; activities it is utilized for must support Healthy People 2020 objectives.

Healthy People 2020 enjoins the National Diabetes Prevention Program that has been established to implement the lifestyle intervention nationwide as lifestyle change has been proven effective in preventing or delaying the onset of type 2 diabetes in high-risk individuals and as the DPP research has demonstrated that “lifestyle intervention has its greatest impact in older adults and was effective in all racial and ethnic groups.”⁸⁹ In addition, Healthy People 2020 states that translational studies of this work have also shown that delivery of the lifestyle intervention in group settings at the community level is also effective at reducing type 2 diabetes risk.⁹⁰

DPP activities funded by the Preventative Health and Health Services Block Grant in the Commonwealth are tracked by the quarterly evaluation reports prepared by the Research and Evaluation Group (R&E Group) at the Public Health Management Corporation (PHMC). R&E Group is collecting quarterly information from each Regional Primary Contractor (RPC) regarding progress toward pending and full CDC DPRP recognition, technical assistance provided by RPCs to partner sites, DPP sessions conducted, participant success stories reported, and progress towards reaching sustainability goals.⁹¹

⁸⁹ *Healthy People 2020. Diabetes*, <https://www.healthypeople.gov/2020/topics-objectives/topic/diabetes> (accessed January 29, 2018).

⁹⁰ *Ibid.*

⁹¹ The Research and Evaluation Group, PHMC. *Diabetes Prevention Program (DPP) Evaluation Quarter 4 Report (April 2017 – June 2017)*. July 2017.

The PHMC report issued in July 2017 lists the following Regional Primary Contractors in Pennsylvania:

- Northeast – American Lung Association (ALA)
- Northcentral – American Lung Association (ALA)
- Northwest – Erie County Department of Health
- Southeast – Health Promotion Council (HPC)
- South Central – American Lung Association (ALA)
- Southwest – Adagio Health.

These RPCs are identifying and assisting partner organizations to establish new DPP sites in identified counties.

According to the PHMC evaluation report for the fourth quarter (April 2017 - June 2017), RPCs were then working with the following partner sites/organizations:

Northeast

1. The Wright Center Medical Group, PC; Lackawanna County
2. Greater Carbondale YMCA; Lackawanna County
3. Geisinger Health Plan; Lackawanna County
4. Bethlehem Health Bureau; Lehigh County
5. Neighborhood Health Centers of the Lehigh Valley; Lehigh County
6. YWCA of Bethlehem; Lehigh County
7. Greater Hazleton Area YMCA/YWCA; Luzerne County
8. Eastcentral Pennsylvania Area Health Education Center (EHEC); Monroe County
9. Bethlehem Health Bureau; Northampton County
10. YWCA of Bethlehem; Northampton County
11. Eastcentral Pennsylvania Area Health Education Center (EHEC); Pike County
12. Geisinger Health Plan; Wayne County
13. Geisinger Health Plan; Wyoming County

North Central

1. Geisinger Health Plan – Towanda; Bradford County
2. Geisinger Health Plan – Warren Center; Bradford County
3. Geisinger Health Plan – Troy; Bradford County
4. Geisinger Health Plan – Valley View; Bradford County
5. Geisinger Health Plan – Berwick; Columbia County
6. Geisinger Health Plan – Danville; Columbia County
7. Geisinger Health Plan; Lycoming County
8. Geisinger Health Plan; Lycoming County
9. Geisinger Health Plan – Sunbury; Northumberland County
10. Geisinger Health Plan – Sunbury; Northumberland County

Northwest

1. DuBois Free Clinic; Clearfield County
2. Meadville YMCA; Crawford County
3. Penn Highlands Elk; Elk County
4. Sight Center of NWPAs; Erie County
5. Brookville YMCA; Jefferson County
6. Bradford YMCA; Mckean County
7. Shenango Valley YMCA; Mercer County

Southeast

1. No Longer Bound; Bucks County
2. Wellness Connection; Bucks County
3. West Chester University; Chester County
4. ABC Diabetes; Montgomery County
5. Episcopal Community Services; Philadelphia County
6. Einstein Health; Philadelphia County
7. Lehigh Valley Health; Schuylkill County

South Central

1. Hollidaysburg YMCA; Blair County
2. Geisinger Health Plan; Blair County
3. Sadler Health; Cumberland County
4. Northern Dauphin County YMCA; Dauphin County
5. East Shore YMCA; Dauphin County
6. Hamilton Health Center; Dauphin County
7. Chambersburg YMCA; Franklin County
8. Summit Health; Franklin County
9. J.C. Blair Memorial Hospital; Huntingdon County
10. Welsh Mountain Health Center; Lebanon County
11. Lebanon Family Health Services; Lebanon County
12. Geisinger Health Plan; York County
13. East Berlin Pharmacy; Adams County

Southwest

1. Butler YMCA; Butler County
2. Conemaugh Diabetes Institute – Conemaugh Health System; Cambria County
3. Adagio Health Uniontown; Fayette County
4. Monongahela Valley Hospital; Washington County
5. Washington Health Systems; Washington County
6. Associates in Family Health Care; Westmoreland County

Since program inception in SFY 2014/2015, four Master Trainers have received their training. However, as of SFY 2016/2017 only three Master Trainers were active and conducting Lifestyle Coach Trainings.

All RPCs provide technical assistance on a regular basis via phone calls or e-mail with lifestyle coaches and coordinators. Continuing education opportunities regarding the program are shared with the service providers. In some regions, sites are visited and feedback is offered to lifestyle coaches. As needed, sites are also given assistance in applying for the DPRP recognition program; they are provided guidance regarding participant recruitment and various incentives that can be used to encourage participants to stay on track to meet CDC standards. Data-reporting guidance is available as well.

Important areas of DPP activities are outreach efforts, collaboration with other local organizations, and participant recruitment.

Media campaigns, advertisements at various public locations, and announcements in local hospitals and physicians' offices are utilized to spur participant recruitment. Geisinger used an internal Health Management nurse referral system and called members identified as being at risk for diabetes. Sadler Health sent letters to its patients identified as having an impaired fasting glucose, hyperglycemia, or other diabetes-related diagnoses. Lebanon Family Health Center created 1000 flyers to be distributed to all local human health service agencies, all local physician offices, community bulletin boards, and at their WIC and clinic front desks. J.C. Blair Memorial Hospital posted flyers, held a press release, advertised internally and externally, and successfully used their physician marketing coordinator to inform the staff about the DPP class and explaining eligibility. Some sites offer incentives for ongoing participation such as pedometers, portion control bowls, water bottles, cookbooks, and towards the end of the course, even grocery store gifts cards or monetary prizes as awards to those participants who have successfully achieved their goals.

In addition to the above-mentioned continuous activities, the Block Grant funding was used for the Make A Choice Campaign and for the Diabetes Prevention Program Statewide Engagement Meeting that took place in August 2017.

The Pennsylvania Department of Health has worked with partners to develop and finalize the Make A Choice Campaign for Pennsylvania, providing print, television, radio, web-based and video promotional efforts to raise awareness of prediabetes and diabetes in the Commonwealth and to encourage those with and at risk for these conditions to seek prevention and self-management programs. Planning has been a primary activity. The campaign's highlights were three live promotional events in November in Pittsburgh, Harrisburg, and Philadelphia.

PADOH, in collaboration with HPC and with support from the National Association of Chronic Disease Directors (NACDD), planned and organized the Diabetes Prevention Program Statewide Engagement Meeting that took place on August 15 – 16, 2017 in Harrisburg. The purpose of this meeting was to draft a DPP Action Plan to scale and sustain the National DPP in Pennsylvania. Day 1 was an educational/call to action session with Centers for Disease Control and Prevention (CDC) and other national partners presenting the national landscape of DPP,

Pennsylvania Department of Health and Philadelphia Department of Public Health presenting the state landscape, and statewide stakeholders highlighting state specific DPP successes. Day 2 was focused on action planning, with the NACDD facilitating small group sessions to identify key action steps, resources available/needed, and stakeholder commitments for each of the four DPP pillars:

1. Increasing awareness of prediabetes and enrollment in the lifestyle change programs (LCP)
2. Increasing screening and testing of people with prediabetes and referrals to LCP
3. Increasing public (Medicaid, state employees) and private coverage for LCP
4. Increasing support for and availability of LCPs in the state

Following the meeting, additional potential stakeholders were surveyed regarding their interest to participate in ongoing meetings to finalize the plan. The goal is to finalize and release the DPP Action Plan by the end of SFY 2017/2018. PADOH, in collaboration with HPC and other key partners will monitor the implementation of the Action Plan during SFYs 2018/2019.

State Funding

Funding for DPP-SFY 2016-2017 - \$50,000

The Pennsylvania Department of Health, through community-based partner, the Health Promotion Council of Southeastern Pennsylvania (HPC), worked with community and clinical partners to implement a continuum of support for those at risk for and with type 2 diabetes by creating collaborative partnerships between DPP, DSME, diabetes self-management programs (DSMP) and health care providers.

A portion of the funding contributed to the Make A Choice campaign.

Diabetes Self-Management Education Program (DSME)

DSME ensures that people who have diabetes receive AADE-accredited and/or ADA-recognized diabetes self-management education. DSME is a collaborative process through which people with diabetes gain the knowledge and skills needed to modify their behavior and successfully self-manage the disease and its related conditions. This process incorporates the needs, goals, and life experiences of the person with diabetes and is guided by evidence-based standards. DSME has been shown to improve outcomes.

A joint position statement of the American Diabetes Association, the American Association of Diabetes Educators (AADE), and the Academy of Nutrition and Dietetics established the key parameters of DSME and developed a diabetes education algorithm that defines when, what, and how DSME should be provided for adults with type 2 diabetes. The goals of the position statement are “to improve the patient experience of care and education, the health of

individuals and populations, and to reduce diabetes-associated per capita health care costs.”⁹² The position statement references studies showing DSME to be cost-effective by reducing hospital admissions and readmissions, as well as estimated lifetime health care costs related to a lower risk for complications. Various studies have indicated that DSME helps patients achieve significant reduction in unhealthy sugar levels. It has also been shown to reduce the onset and/or advancement of diabetes complications, to improve quality of life and lifestyle behaviors such as having a more healthful eating pattern and engaging in regular physical activity, to enhance self-efficacy and empowerment, to increase healthy coping, and to decrease the presence of diabetes-related distress and depression.⁹³

ADA and AADE endorse a personalized and comprehensive approach, where collaboration and effective communication are perceived to be the route to patient engagement. Through this approach, patients are better able to explore options, choose their own course of action, and make informed self-management decisions.

The DSME algorithm of care relies on five guiding principles:

- patient engagement,
- information sharing,
- psychosocial and behavioral support,
- integration with other therapies, and
- coordinated care.⁹⁴

Diabetes self-management education and support process should be ongoing; it should be assessed, provided and adjusted at critical times such as at first diagnosis, with the emergence of new complicating factors or transitions in care; annual assessment is recommended.

Compliance with the National Standards for DSME/S is intended to ensure the adequate quality of the programs offered to people who have diabetes nationwide.

In Pennsylvania, Diabetes Self-Management Education (DSME) work is performed under three funding sources:

- State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (DP13-1305), also known as LiveHealthyPa Grant
- Preventative Health and Health Services Block Grant, also referred to as Block Grant
- State funding.

⁹² Powers, Margaret A. et al. “Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics.” *The Diabetes Educator*. 2015. DOI: 10.1177/0145721715588904 (accessed January 30, 2018).

⁹³ Ibid.

⁹⁴ Ibid.

The Pennsylvania Department of Health acts to increase people's access to and utilization of DSME providers in the Commonwealth. It assesses DSME capacity in Pennsylvania; promotes DSME to people who have diabetes as well as employers, payors, managed care organizations, and providers to increase DSME referrals and utilization; and works on expanding the number of AADE-accredited and ADA-recognized DSME sites in high-need areas of the Commonwealth.

State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health (DP13-1305), also known as LiveHealthyPA Grant

This is a five-year grant that ends June 2018; a new grant opportunity is anticipated but not assured.

- Funding for DSME
 - SFY 2016-2017 - \$247,000
 - SFY 2017-2018 - \$228,000

- Contractors for DSME
 - Health Promotion Council
 - Quality Insights

- Activities
 - Diabetes self-management education programs improve health outcomes and provide people with the knowledge, skill and ability to make daily self-care decisions to manage their diabetes. PADOH and partners, Health Promotion Council (HPC) and Quality Insights (QI), are working to increase access and referrals to DSME programs accredited/recognized by the American Association of Diabetes Educators (AADE) and the American Diabetes Association (ADA).
 - PADOH, with its partners, is working to promote participation in AADE-accredited and ADA-recognized DSME programs. HPC is improving access to programs by providing technical assistance and scholarships to DSME providers seeking accreditation or recognition. Medicaid Managed Care Organizations (MCO) and QI are working to increase referrals to programs through educating primary care providers on DSME and the referral process. PADOH and partners are raising awareness of the value of DSME and the location of DSME programs, and making connections between stakeholders across the state to encourage people with diabetes to attend DSME.
 - The project team will continue to track and build capacity for DSME providers through technical assistance. Additional outreach and technical assistance will expand the use of pharmacists as DSME providers. Educational resources are being developed for MCOs to educate their members in addition to their provider networks. PADOH and partners are connecting organizations, building relationships, and raising awareness of DSME across the state.

- Results
 - In 2016, approximately 46,000 Pennsylvanians participated in DSME programs across the state.
 - PADOH partner, HPC, provided technical assistance and scholarships to increase the number of accredited or recognized DSME programs. As of October 2017, there were 425 DSME sites across the state.
 - MCOs disseminated provider education materials to approximately 27,918 individuals in their provider networks.
 - QI engaged 125 health systems to educate them on DSME and referral protocols; the percent of participating health systems with policies or procedures to refer patients with type 2 diabetes to DSME increased from 19 percent to 50 percent.
 - PADOH and partners launched a statewide social marketing campaign to increase awareness.

Preventative Health and Health Services Block Grant (Block Grant)

The Block Grant is issued in two-year increments, and activities must support Healthy People 2020 Objectives.

- Funding for DSME
 - SFY 2016-2017 - \$409,000
 - SFY 2017-2018 - \$200,000
- Contractors for DSME
 - Health Promotion Council
 - Pennsylvania Pharmacists Association (2017-2018 only)
- Activities
 - SFY 2016-2017 –
 - PADOH through contractor HPC worked to increase the number of DSME sites and to support sustainability of existing programs through technical assistance.
 - PADOH through contractor HPC initiated a social media campaign to raise awareness and increase participation in DSME.
 - SFY 2017-2018 –
 - PADOH through contractor HPC is continuing work to increase the number of DSME sites and to support sustainability of existing programs through technical assistance.
 - PADOH through contractor Pennsylvania Pharmacists Association (PPA) is working to engage their pharmacist network to increase the number of pharmacists who achieve accreditation as DSME providers.

- Results
 - Between October 2015 and September 2016 (Block Grant funding periods coincide with the Federal Fiscal Year, so reporting is based on those periods), the number of DSME sites in Pennsylvania increased from 294 to 342. Through that period, the Pennsylvania Department of Health in collaboration with community-based partner, the Health Promotion Council (HPC), assessed capacity, identified service gap areas, distributed outreach materials, provided technical assistance and stipends, and worked on a social marketing campaign. HPC provided technical assistance in some form to 55 sites, with 25 sites achieving accreditation or recognition as a direct result of project efforts.
 - In August 2017, the Health Promotion Council launched Makeachoice.org, an online resource to help in the fight against diabetes and obesity. Makeachoice.org is part of a statewide initiative to promote healthy living, physical activity and weight management to prevent and manage prediabetes, type 2 diabetes and obesity. The initiative culminated with Wellness Challenge events during National Diabetes Awareness Month in November 2017. This statewide initiative connects Pennsylvanians to personal success stories, diabetes education programs and a free online resource – makeachoice.org – to help encourage and inspire Pennsylvanians to prioritize their health and make a choice to live a healthier lifestyle.
 - Activities are underway for the current fiscal year; results are not yet available for those items.

State funding

- Funding for DSME
 - SFY 2016-2017 - \$40,000
 - SFY 2017-2018 - \$50,000
- Contractors for DSME
 - Health Promotion Council
- Activities
 - SFY 2016-2017 –
 - PADOH, through contractor HPC, worked to support existing programmatic infrastructure, local resources and strategic partnerships to scale and replicate bi-directional referrals in health systems.
 - PADOH, through contractor HPC, worked with community and clinical partners to implement a continuum of support for those at risk for and with type 2 diabetes by creating collaborative partnerships between DPP, DSME, diabetes self-management programs (DSMP) and health care providers.

Juvenile Diabetes Cure Research Check-off Program

State Funding

- Funding for Juvenile Diabetes Cure Research Check-off Program - SFY 2016-2017 - \$10,000
- Contractors for DSME - Health Promotion Council
- Activities - PADOH, through contractor HPC, worked to promote the program as a part of the Make A Choice Campaign.

The Juvenile Diabetes Cure Research Check-off Program was established pursuant to Act 133 of 2004.⁹⁵ The act created a state income tax check-off option for individuals to contribute a portion of their state tax refund to be donated directly to the Pennsylvania Department of Health to support research for type 1 diabetes. The department publishes an annual report to the Pennsylvania General Assembly, which provides an update in activities and contributions to the program, as well as guidelines for distribution of collected funds. The program funds research grants focused on restoring normal glucose blood levels, addressing complications of the disease, and preventing type 1 diabetes.

Type 1 diabetes, previously known as insulin-dependent diabetes mellitus, or juvenile-onset diabetes, used to be called that way because it usually appears in children and young adults though its onset may occur at an older age as well. Risk factors may be autoimmune, genetic, or environmental, but the exact cause of type 1 diabetes remains unknown. There is no known way to prevent it, and there is no cure. Research centered on type 1 diabetes strives to detect its causes and to find a cure.

The Pennsylvania Department of Health Diabetes Prevention and Control Program is responsible for the administration of the Juvenile Diabetes Cure Research Check-Off Program. It awards grants to leading medical research institutions to conduct studies in appropriate areas. Two two-year grants for \$100,000 and \$150,000 respectively were awarded to the Pennsylvania State University (PSU), College of Medicine, to conduct vision impairment diabetic retinopathy research. Numerous articles have been published describing the results of these studies.

A third two-year grant for \$200,000 was awarded to the Pennsylvania State University, College of Medicine, “to study the role and mechanism of microRNA-34a (a gene) in curing and preventing type 1 diabetes; this research began in January 2015.”⁹⁶ The researchers reported substantial progress during the first 180 days, but in summer 2015, the change in principal investigator at the PSU College of Medicine caused delays, so the grant was renewed for three more months, and it ended in March 31, 2017.

⁹⁵ This legislation added § 315.7 to the Tax Reform Code of 1971.

⁹⁶ Pennsylvania Department of Health. *Juvenile Diabetes Cure Research Check-Off Program Annual Report Jan. 1, 2016 -- March 31, 2017*, <http://www.health.pa.gov/My%20Health/Diseases%20and%20Conditions/A-D/Documents/2016%20JD%20Report%20Final.pdf> (accessed September 19, 2017).

For fiscal year 2017-2018, the Diabetes Prevention and Control Program has decided not to fund a research project. An adequate balance was not available in the fund account due to a considerable reduction in contributions for the past several years. In 2010, annual contributions reached over \$72,000, but in 2015 and 2016, they were close to only \$20,000.⁹⁷ PADOH has made efforts to increase contributions to the fund by posting information on the department's website and by including messages in the Make A Choice media campaign in 2017. A new request for application (RFA) will be issued with the effective date July 1, 2018.⁹⁸

Obesity Prevention and Wellness Section Activities

Obesity is associated with type 2 diabetes in adults and increased risk of impaired glucose tolerance, insulin resistance, and type 2 diabetes in children. CDC list diabetes among the health risks posed by obesity for both children and adults, along with a number of other serious diseases and chronic conditions.⁹⁹

Obesity is a complex health issue to address. Obesity results from a combination of causes and contributing factors, including individual factors such as behavior and genetics. Behaviors can include dietary patterns, physical activity or inactivity, medication use, and other exposures. Additional contributing factors in our society include the food and physical activity environment, education and skills, and food marketing and promotion.

Taking into account the variety and complexity of factors that may lead to obesity and its potential harmful consequences, PADOH has implemented several programs with the goal to prevent it and promote healthy living choices.

For this report, PADOH submitted the following Pennsylvania obesity data based on several sources:

1. Pennsylvania now has the 24th highest adult obesity rate in the nation, according to "The State of Obesity: Better Policies for a Healthier America" released September 2016. Pennsylvania's adult obesity rate is currently 30.0 percent, up from 20.3 percent in 2000 and from 13.7 percent in 1990.

⁹⁷ Ibid.

⁹⁸ Ibid.

⁹⁹ Centers for Disease Control and Prevention. *Childhood Obesity Causes & Consequences*, <http://www.health.pa.gov/My%20Health/Diseases%20and%20Conditions/A-D/Documents/2016%20JD%20Report%20Final.pdf> (accessed February 9, 2018).
Centers for Disease Control and Prevention. *Adult Obesity Causes & Consequences*, <https://www.cdc.gov/obesity/adult/causes.html> (accessed February 9, 2018).

2. In Pennsylvania, Hispanic adults have the highest prevalence of self-reported obesity (39.1%) followed by non-Hispanic black adults (35.7%), and non-Hispanic whites (29.5%).
3. The number of obese children has more than tripled since 1980. The good news is that obesity numbers appear to be leveling off or even declining in some groups. The bad news is that many of our children are still severely overweight. If we do not change things now, experts predict that American children may have shorter lifespans than their parents.
4. In Pennsylvania, 17.1 percent of students in grades K-12 are obese and 22 percent are overweight (2012-2013 school year).
5. People who have obesity, compared to those with a healthy weight, are at increased risk for many serious diseases and health conditions: all-causes of death (mortality); high blood pressure (hypertension); high LDL cholesterol, low HDL cholesterol, or high levels of triglycerides (dyslipidemia); type 2 diabetes; coronary heart disease; stroke; gallbladder disease; osteoarthritis (a breakdown of cartilage and bone within a joint); sleep apnea and breathing problems; some cancers (endometrial, breast, colon, kidney, gallbladder, and liver); low quality of life; mental illness such as clinical depression, anxiety, and other mental disorders; and body pain and difficulty with physical functioning.
6. The estimated annual medical cost of obesity in the U.S. was \$147 billion in 2008 U.S. dollars; the medical costs for people who are obese were \$1,429 higher than those of normal weight.¹⁰⁰

Obesity programs in the Commonwealth are implemented under the auspices of the PADOH Obesity Prevention & Wellness Section, Division of Nutrition and Physical Activity.

The Obesity Prevention & Wellness Section (Section), Division of Nutrition and Physical Activity strives to prevent obesity; prevent complications, disabilities and burdens associated with obesity; and eliminate obesity-related health disparities. The Section implements data-driven and evidence-based strategies to improve nutrition environments and increase physical activity in schools, early care and education, worksites, and communities. This includes, but is not limited to, increasing access to healthy foods and beverages; education and promotion of healthy foods and beverages and physical activity; implementation of comprehensive school physical activity programs; and, creating or enhancing access to places where people can be physically active and providing social supports to increase physical activity.

¹⁰⁰ Personal e-mail from Ms. Barbara Orwan, Public Health Program Administrator, PADOH Bureau of Health Promotion and Risk Reduction, on November 22, 2017.

Pennsylvania Nutrition and Physical Activity Self-Assessment for Child Care (PA NAP SACC)

According to the Centers for Disease Control and Prevention, 41 percent of U.S. children aged 0 to 5 years are cared for weekly in non-parental arrangements, such as childcare centers, family childcare homes, pre-kindergarten classrooms and Head Start programs: 64 percent for children 3 to 5 years of age.

“Caring for Our Children: National Health and Safety Standards; Guidelines for Early Care and Education Programs” (CFOC) is a subset of the national health and safety performance standards guiding obesity prevention efforts in early care and education (ECE) settings. The National Resource Center for Health and Safety in Child Care and Early Education has identified 47 of the 250 CFOC components as having "high impact" on childhood obesity prevention. Pennsylvania fully meets only 4 of the 47 standards in currently licensing regulations. Education and consultation on nutrition standards/food service guidelines, increased opportunities for physical activity and limiting screen time provide early care and education directors and teachers with the resources that need to update, create, promote and enforce obesity-prevention policies for children, family and staff.

The Pennsylvania Department of Health has partnered with the Departments of Education’s and Human Services’ Office of Child Development and Early Learning, Tuscarora Intermediate Unit, and Early Childhood Education Linkage System to implement the PA NAP SACC in early care and education centers across Pennsylvania. PA NAP SACC is a web-based continuous quality improvement intervention designed to help child care providers improve nutrition and physical activity practices within their settings. The PA NAP SACC provides assessment, education, technical assistance and resources to licensed centers in all 67 counties on nutrition standards, physical activity, breast-feeding and screen time.

Pennsylvania has 241 Early Childhood Education programs (ECEs) that have strengthened or created new policies to educate, promote and provide children, staff and family with proper nutrition standards, increased opportunities for physical activity and limited screen time use. PADOH and partners are providing assessments, resources, education and technical support to ECEs across the state through the Pennsylvania Nutrition and Physical Activity Self-Assessment in Child Care (PA NAP SACC) mini grant project. The policy improvements or creation have impacted an estimated 16,000 children and families from 2013 to 2017. Significant improvements were found across all nutrition and physical activity policy scales of the PA NAP SACC self-assessment. Greatest policy improvements were within

1. written policies for both nutrition and physical activity;
2. requirements for staff and families to receive professional development and training in healthy eating and physical education;
3. the feeding environment, where children serve themselves and teachers function as role models in healthy eating; and
4. teachers incorporating physical activity into classroom routine, while encouraging and serving as role models in physical activity.

Building Healthy Schools

Childhood obesity is a growing epidemic in Pennsylvania. Annual growth screenings conducted by school districts show a disturbing trend of over one-third of Pennsylvania school-age children are obese or overweight. Inactivity and a diet that is high in calories, lacking in fruits and vegetables, full of fast food, high-calorie beverages and oversized portions contribute to weight gain. Because youth spend most of their waking hours in school, schools should be a place where these risk factors for obesity are limited. Students who have daily access to healthy foods, nutrition education, and physical activity gain lifelong healthy habits and are better prepared to learn and succeed academically. School wellness teams are the key to creating healthier environments for staff and students.

PADOH administers the Building Healthy Schools (BHS) program, which was developed to help schools create supportive nutrition environments and increase opportunities for physical activity. PADOH provides technical assistance, resources, and training opportunities for the programs. Each school districts' BHS program is organized through a representative, active wellness council. This team of administrators, staff, teachers, parents, community members and students completes an inventory to determine what is currently happening around health, safety and wellness. Using the results, the team develops a plan to take action. The plan becomes a roadmap for healthy initiatives that help students and staff thrive.

Active wellness councils, which meet four times per school year, are integral to a healthy school climate. All BHS participants have active wellness councils, and survey responses showed that all had plans to sustain their wellness councils and 86 percent view active wellness councils as very important for planning wellness initiatives. BHS participants also report confidence in their ability to independently use self-assessment data to plan wellness initiatives, collect data and evaluate their efforts. BHS not only taught participating districts about the importance of active wellness councils, 71 percent of districts now identify nutrition and physical activity as high priorities.

Thanks to the efforts of their wellness councils, more than 35,460 students in Pennsylvania are enjoying healthier school environments as a result of BHS program. By assessing current practices and policies, wellness teams identified areas for improvement. Then they created action plans and implemented initiatives to increase access to healthy foods and water, limit access to unhealthy foods and beverages and increase opportunities for physical activity. Repeating these steps annually sustains the healthier school climate.

The BHS program was developed to be a sustainable model. By annually repeating the steps of assessing, planning, implementing and evaluating, schools maintain and build upon wellness initiatives. The capacity built by active wellness councils allows progress to continue to be made even if an individual champion leaves a school or district. Because districts self-assess and identify areas for improvement according to their own needs, the process ensures buy-in and allows teams to address changing priority areas. The Pennsylvania Department of Health supports wellness council efforts through BHS and partnerships to provide technical assistance, resources and training opportunities.

The Pennsylvania Healthy Corner Store Initiative

Strategies to increase access to healthy food have never been more important. People's food choices are largely influenced by accessibility and affordability of food options. The term "food desert" refers to areas where low income residents do not have convenient access to supermarkets. By USDA standards, most of Pennsylvania's low income urban populations reside more than 1/2 mile from the nearest supermarket. Residents face barriers, such as a lack of transportation, that prevent them from shopping at stores that sell healthful foods. With few alternatives, residents shop at so-called "corner" stores, where healthful, nutritious foods vie with junk food for shelf space. Children frequently visit corner stores while walking to and from school, buying on average 360 calories in chips, candy, and sugary drinks in a typical visit. Poor nutrition is one of the risk factors for chronic diseases such as obesity and diabetes. In fact, 17 percent of children in grades K-12 have obesity; studies project that the present generation of school children will be the first to be outlived by their parents.

The Pennsylvania Healthy Corner Store initiative is being implemented in Allentown, Bethlehem, Easton, Erie, Harrisburg, Lancaster, Pittsburgh, Reading, State College and Williamsport, providing over 890,000 residents in ten of the most populated cities in Pennsylvania with access to healthier food and beverage options closer to home. The Pennsylvania Department of Health partnered with the Food Trust to provide training and support to dedicated community partners. Partners work with store owners to increase inventory of healthier food and beverage in over 150 stores throughout Pennsylvania. Increasing healthier options make it easier for community residents to make healthier choices.

The Department of Health is committed to increasing Pennsylvania citizens' access to healthy food and beverages. In order to accomplish this, and to encourage customers to make healthier choices, stores increase the number of healthy food items that they sell. Materials are displayed to identify the store as a participating Healthy Corner Store and to guide customers to healthier options. Store owners who stock healthier items receive technical assistance to maintain inventory changes. Store owners receive training on topics like buying and handling fresh produce and fresh produce temperature guide. Some stores are also eligible for equipment, such as refrigerators, to stock healthy options.

Through the first four years of the program, store owners collectively received 237 trainings to guide their adoption of a healthy retail environment. Participation led to healthy product additions from every area assessed: more than 85 percent of stores added whole grain products, 81 percent added inventory in fruits and vegetables, 63 percent added healthy protein sources, and 44 percent added low-fat dairy options. Many store owners are highly engaged including one who approached the community partner to enroll three of his businesses. Collectively, this engagement contributes to increased access to healthy food for many Pennsylvanians.

Community partners are now working with store owners to implement in-store nutrition education, health screenings, and other community events with 19 corner stores throughout Pennsylvania. In many cities, the Initiative is partnering with SNAP-Ed to provide the nutrition education, aiding in sustainability. Residents will learn about a nutrition topic, experience a taste

test, and be given a tour to see the healthy options. Interested shoppers will be directed to free health screenings including blood pressure and BMI checks. Educating shoppers on nutrition and their own health brings attention to the healthier options available in the store.

WalkWorks

Obesity and insufficient physical activity pose serious reasons for public health concerns. Over one-third of Pennsylvania school-age children are overweight or obese. Almost two-thirds of Pennsylvania adults are overweight or obese while more than one-quarter have not participated in any physical activity in the past month. Being physically active is one of the most important steps that Pennsylvanians can take to improve their overall health. Communities and streets are usually not designed to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders. Streets designed for all modes of transportation, called Complete Streets, make it easy to cross the street, get to school, walk to shops, and bicycle to work. The Pennsylvania Department of Health encourages WalkWorks communities to consider developing and/or adopting a pedestrian or transportation master plan that incorporates Complete Streets guidelines.

The WalkWorks program was developed to help increase opportunities for physical activity at the community level. Local community-based partners lead the implementation of WalkWorks and seek input from stakeholders consisting of key decision-makers from different sectors within the community. This group helps determine the walking route locations that provide connectivity to significant community destinations such as parks, schools, community centers, and housing. When possible, walkability assessments are completed. Partners are given recommendations to improve the walkability of the routes. Resources are shared with partners to inform about local policies related to benefits of walkable communities.

WalkWorks has helped encourage residents in 14 Pennsylvania counties to be more active through the development of community-based walking routes. WalkWorks establishes walking groups for social support and encourages communities to develop or adopt policies designed to increase opportunities for physical activity.

As a result of WalkWorks, 68 safe and easily accessible walking routes have been identified and mapped utilizing the built environment in 14 counties throughout Pennsylvania, including Allegheny, Blair, Cameron, Chester, Dauphin, Delaware, Fayette, Indiana, Lancaster, McKean Northampton, Philadelphia, Schuylkill and Tioga counties. 11 routes have had walkability assessments, and there are almost 1,500 registered walkers. Communities have adopted 3 Health in All Policies resolutions, 1 Vision Zero resolution, and 1 Complete Streets policy. In an effort to further expand opportunities for physical activity in the built environment, WalkWorks recently selected four municipal or similar local governmental entities to assist with the development of a transportation plan with an emphasis on walking and biking.

DEPARTMENT OF AGING

Pennsylvania Department of Aging (PDA) pursues a variety of activities that facilitate healthy aging. It guides individuals on improving health practices so that they may live a longer and more satisfying life.

Pennsylvania Department of Aging offers over 80 health and wellness programs for seniors, including

- Falls Prevention Classes
- Exercise Classes
- Nutrition Classes
- Health Screenings
- Chronic Disease Self-Management Workshops.¹⁰¹

Health & Wellness Program

The Health & Wellness Program runs under the auspices of the PDA's Education and Outreach Office (EEO). The Education and Outreach Office oversees health and consumer education programs initiated by PDA, including the Health Insurance Information Counseling and Assistance Program, also known as APPRISE, and the Health & Wellness Program. EEO also develops and maintains the Elder Corps Information program to coordinate recruitment and referral services for volunteers in the aging network.¹⁰²

The role of PDA's Health & Wellness Program is to

- Research and interpret federal guidelines regarding the Older Americans Act (OAA) Title IIIID funding for disease prevention and health promotion services;
- Coordinate efforts among community resources;
- Act as a catalyst for the Area Agencies of Aging (AAA) and PDA's Health & Wellness initiatives;
- Provide training, technical assistance, and materials, as appropriate, for any of the PDA-endorsed evidence-based programs.

¹⁰¹ Pennsylvania Department of Aging. *HEALTH & WELLNESS*, November 8, 2017, <http://www.aging.pa.gov/aging-services/health-wellness/Pages/default.aspx>

¹⁰² The information regarding the Health & Wellness Program, its role, goals and funding sources, was provided to the Joint State Government Commission by the Pennsylvania Department of Aging on November 2, 2017.

The goals of PDA's Health & Wellness program are to

- Abolish the myth that inevitable functional decline comes with age;
- Empower older adults with the information they need to age well;
- Support older adults in making lifestyle changes to improve their overall health;
- Reduce the utilization of the healthcare system.

PDA receives federal funding from the Administration for Community Living (ACL), through the OOA Reauthorization 2016 Title IIID, to provide disease prevention and health promotion services through the Health & Wellness Program. Under Title IIID of the OAA, funding has been provided since 1987 to states and territories based on their share of the population aged 60 and over the programs that support healthy lifestyles and promote healthy behaviors.

Effective October 1, 2016, ACL required Title IIID funds to be used only for evidence-based programs, as defined by ACL. Because of this mandate, PDA issued Aging Program Directive 16-04-01: Older Americans Act Title IIID Funding for Evidence-Based Programs AND Health & Wellness Program on October 1, 2016. APD 16-04-01 outlines the roles, responsibilities, and directives between PDA's Health & Wellness Program and the 52 AAA's Health & Wellness Programs serving Pennsylvania's 67 counties.

Chronic Disease Self-Management Program (CDSMP) and Diabetes Self-Management Program (DSMP) are two of the PDA-endorsed evidence-based programs that the AAAs may choose to conduct in their service areas.

Chronic Disease Self-Management Program

The Chronic Disease Self-Management Program (CDSMP) was developed by Stanford University Patient Education Research Center as a collaborative research project between Stanford and the Northern California Kaiser Permanente Medical Care Program. This program teaches older adults practical skills for managing chronic health conditions such as diabetes, hypertension, heart disease, and stroke. The objective is for participants to gain the confidence and motivation needed to manage the challenges of living with chronic health conditions. Certified Lay Leaders or Master Trainers from the CDSMP conduct workshops, which consist of 2½-hour sessions held over six weeks. Workshops are held at senior community centers, senior housing facilities, faith-based organizations, libraries, health centers, and various other community sites.

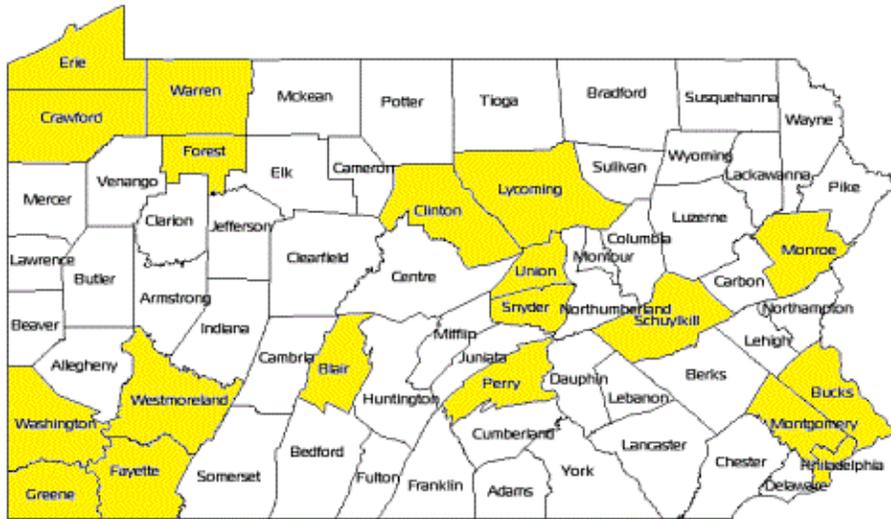
Beginning in 2010, PDA purchased a multi-agency license for CDSMP from Stanford University. Since 2010, PDA has supported the delivery of CDSMP to almost 3000 Pennsylvania residents.

The licensing entity of the CDSMP has since moved from Stanford University to the Self-Management Resource Center. Under PDA's license with the Self-Management Resource Center, there are currently 36 CDSMP Master Trainers and 100 CDSMP Lay Leaders trained to conduct CDSMP workshops reaching Pennsylvanians in 40 counties.¹⁰³

¹⁰³ Data on CDSMP in Pennsylvania were provided to the Joint State Government Commission by the Pennsylvania Department of Aging on November 2, 2017.

In fiscal year 2015-2016, there were 335 CDSMP participants across 19 counties in 14 AAA service areas. Of these 335 CDSMP participants, 11 percent reported they had been diagnosed with diabetes.

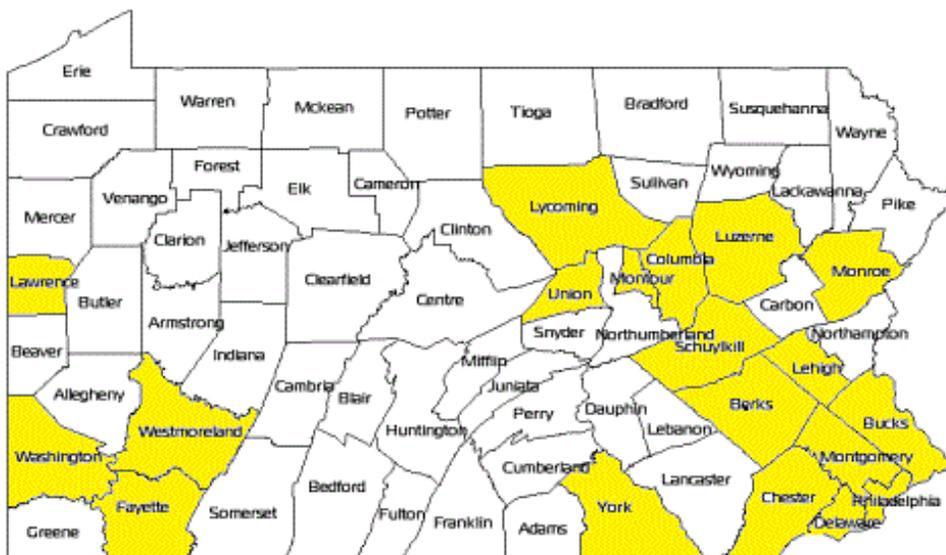
FY 2015-2016 CDSMP Workshops in Pennsylvania



Map provided by Pennsylvania Department of Aging.

In fiscal year 2016-2017, CDSMP expanded to include 365 participants, across 19 counties in 17 AAA service areas.

FY 2016-2017 CDSMP Workshops in Pennsylvania



Map provided by Pennsylvania Department of Aging.

CDSMP has received favorable reviews nationwide. According to PDA, a study found that participants who took the program

- improved their healthful behaviors (exercise, coping, and communications with physicians);
- improved their health status (self-reported health, fatigue, disability, and health distress); and
- decreased their days in the hospital.¹⁰⁴

Diabetes Self-Management Program

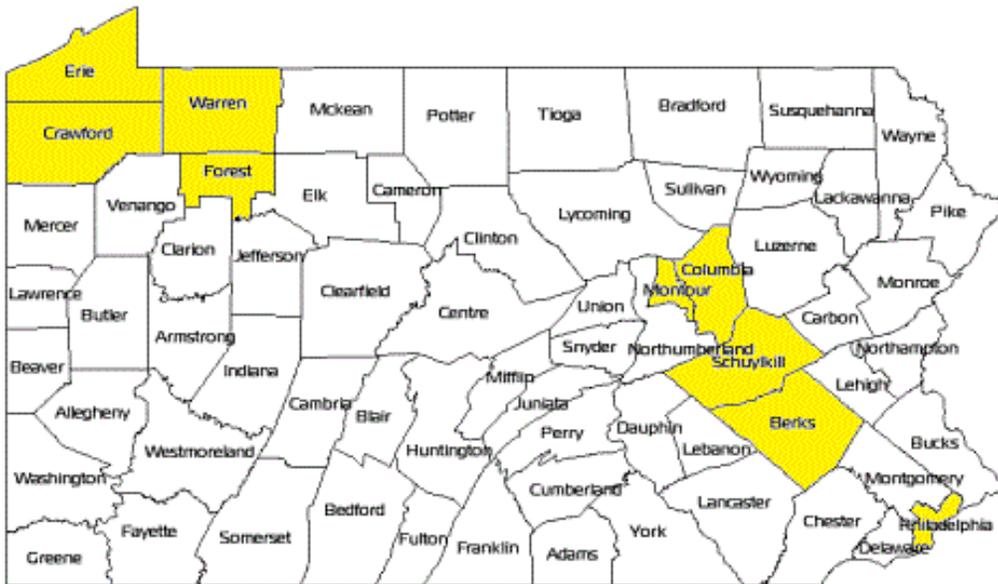
The Diabetes Self-Management Program (DSMP) was developed by Stanford University as a complement to the CDSMP. Similar to CDSMP, DSMP uses certified Lay Leaders or Master Trainers to conduct workshops to teach older adults who have diabetes to manage their condition.. Workshops take place in senior community centers, senior housing facilities, faith-based organizations, libraries, health centers, and various other community sites.

In October 2015, Health Promotion Council of Pennsylvania, Inc. (HPC) was awarded a two-year Prevention and Public Health Fund (PPHF-2015) grant from the Administration on Community Living The U.S. Department of Health and Human Services to expand DSMP in Pennsylvania. With the funding award, DSMP was added to PDA's SRMC license, and HPC was able to provide DSMP training for existing and new PDA Master Trainers and Lay Leaders as well as initial DSMP supplies. Due to a slow start, there were only 8 DSMP workshops with 83 participants in FY 2015-2016. Once PDA Master Trainers were cross-trained in DSMP, they were able to train new DSMP Lay Leaders. To date, there are 20 DSMP active Master Trainers and 53 DSMP Lay Leaders serving approximately 16 counties.¹⁰⁵

¹⁰⁴ Pennsylvania Department of Aging. *HEALTH & WELLNESS*, November 8, 2017, <http://www/aging.pa.gov/aging-services/health-wellness/Pages/default.aspx>.

¹⁰⁵ Data on DSMP in Pennsylvania were provided to the Joint State Government Commission by the Pennsylvania Department of Aging on November 2, 2017.

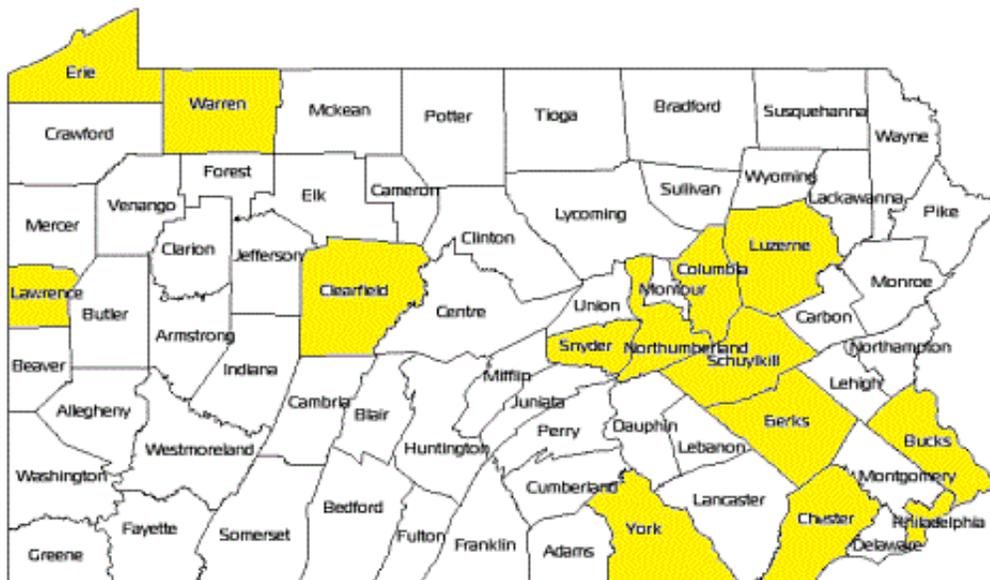
FY 2015-2016 DSMP Workshops in Pennsylvania



Map provided by Pennsylvania Department of Aging.

However, with introduction of the Aging Program Directive 16-14-01, AAAs increased their evidence-based programs, resulting in 30 DSMP workshops with 387 participants in FY 2016-2017.

FY 2016-2017 DSMP Workshops in Pennsylvania



Map provided by Pennsylvania Department of Aging.

In addition to CDSMP and DSMP, the AAA network utilizes approximately 24 other evidence-based programs that address areas such as injury and disease prevention, exercise, chronic conditions, nutrition, mental health, medication management, and substance abuse.¹⁰⁶ These programs are provided at no charge to those 60 years old and older.

PACE

Along with facilitating health and wellness programs teaching older adults practical skills that can help in maintaining good health, preventing illness and injury, and successfully managing their chronic conditions, the Department of Aging is also responsible for programs assisting eligible older Pennsylvanians in paying for their prescription medications. Taking the necessary medications is an essential part of disease management. It is critical for chronic conditions like diabetes.

The Pharmaceutical Assistance Contract for the Elderly (PACE) program and PACE Needs Enhancement Tier (PACENET) program assist qualified older adults age 65 years or older in paying for their prescription medications. “PACE covers all medications requiring a prescription in the Commonwealth, as well as insulin, insulin syringes, and insulin needles, unless a manufacturer does not participate in the Manufacturers’ Rebate Program.”¹⁰⁷ PACE pays the cost of prescription drugs and insulin supplies over a copay. PACENET pays the cost of prescription drugs and insulin supplies after a claimant meets the premium requirement and a copayment. The PACEPlus Medicare Program pays Medicare premiums for Part D for PACE and PACENET cardholders. PACENET cardholders repay the Part D premiums. With the goal of providing seamless coverage, the program provides benefits when Medicare Part D does not, for example, during the deductible and the coverage gap, for drugs excluded by Part D, for drugs not in a plan’s formulary, and for copayment differentials between the Part D plan coverage and the PACE and PACENET copayments. The PACE and PACENET programs supported 277,679 older adults in 2016, 48,923 of whom received pharmaceutical assistance.¹⁰⁸

An important component of the PACE/PACENET program is “updating physicians about changing therapies in complicated disease states.”¹⁰⁹ Type 2 diabetes is one of these diseases. In April 2016, the program released an updated diabetes education module as part of its long-standing physician education program. Clinical educators completed 681 physician office visits in 2016. The module includes four parts: a teaching tool, an evidence document report, durable clinician reference cards, and patient education materials.

¹⁰⁶ Information provided to the Joint State Government Commission by the Pennsylvania Department of Aging on November 2, 2017.

¹⁰⁷ Pennsylvania Department of Aging. *PACE (Pharmaceutical Assistance Contract for the Elderly) Annual Report to the General Assembly, January 1 – December 31, 2016*, <http://www.aging.pa.gov/publications/annual-reports/Documents/2016%20PACE%20Annual%20Report.pdf>.

¹⁰⁸ Information provided to the Joint State Government Commission by the Department of Aging on September 21, 2017.

¹⁰⁹ Pennsylvania Department of Aging. *PACE (Pharmaceutical Assistance Contract for the Elderly) Annual Report to the General Assembly, January 1 – December 31, 2016*, <http://www.aging.pa.gov/publications/annual-reports/Documents/2016%20PACE%20Annual%20Report.pdf>.

The goals for the diabetes educational program are to help practitioners

- assess the comparative effectiveness and safety of type 2 diabetes medications;
- understand the evidence regarding appropriate therapy;
- weigh the benefits, risks, and value of treatment options; and
- improve the quality of prescribing and patient care.

Educational modules are found at www.alosahealth.org, under Our Solutions. PACE Academic Detailing Modules are designated for *AMA PRA Category 1 Credits* by the Harvard Medical School.¹¹⁰

The updated diabetes module contains information on the aggressive management of hypertension and hyperlipidemia to prevent complications. It emphasizes a focus on healthy diet, exercise and adherence to medications.¹¹¹

To evaluate the effectiveness of its academic detailing, the program conducts collaborative research and evaluation projects. A recent program evaluation study by Wilkes University School of Pharmacy and Magellan Health/PACE is focused on the impact of the PACE physician education program on the treatment of type 2 diabetes. The study specifically examines prescribing patterns before and after prescribers participated in the program's 2013 diabetes management module. To ascertain whether the module has been able to improve the quality of prescribing and patient care, as intended, the methodology for this evaluation involves a quasi-experimental design using an interrupted time-series to track changes in several prescribing quality metrics during the year preceding and the year following prescribers' participation in the training module. In addition to the group of prescribers who received the diabetes management training, the evaluation analysis also includes a comparison group of PACE/PACENET prescribers who did not receive the training.¹¹²

The quality metrics identified for this study include

- Prescribing of metformin for patients with type 2 diabetes
- Prescribing of HMG-CoA reductase inhibitors (statins) for patients with type 2 diabetes
- Prescribing of either an angiotensin-converting-enzyme (ACE) inhibitor or an angiotensin II receptor blocker (ARB) for patients who have both type B diabetes and hypertension
- Avoidance of long-acting sulfonylureas (i.e., chlorpropamide, glyburide) in patients with diabetes.¹¹³

¹¹⁰ Information provided to the Joint State Government Commission by the Department of Aging on September 21, 2017.

¹¹¹ Pennsylvania Department of Aging. *PACE (Pharmaceutical Assistance Contract for the Elderly) Annual Report to the General Assembly, January 1 – December 31, 2016*, <http://www.aging.pa.gov/publications/annual-reports/Documents/2016%20PACE%20Annual%20Report.pdf>.

¹¹² Ibid.

¹¹³ Ibid.

According to information provided by the Research and Evaluation Division of the Bureau of Pharmaceutical Assistance, the analysis employed by the above-mentioned study is only one mode of evaluation applied to PACE's academic detailing program. Prescribers' knowledge and their perceptions of the module topic and the value of the training are surveyed regularly, and results of these satisfaction surveys have provided consistently positive responses to academic detailing visits on the part of PACE prescribers. Many of the academic detailer-provider relationships established through the detailing program have been long term, extending back to the program inception more than 12 years ago.¹¹⁴

The head of the PACE Research and Evaluation Bureau, Ms. Theresa V. Brown, emphasized that "there is inherent value in having direct conduits to the network of primary care providers."¹¹⁵ The Department of Aging experts responsible for administering PACE believe that "with an unrestrained pharmaceutical industry aggressively advertising potent and expensive drugs to patients and primary care providers, there is the potential to increase misuse of prescription drugs and to increase patient cost associated with prescription drugs."¹¹⁶ This may also negatively affect publicly funded prescription drug benefit programs such as PACE. The PACE program perceives academic detailing as "an important line of defense that PACE prescribers have come to rely on for unbiased, evidence-based pharmacotherapy information."¹¹⁷

¹¹⁴ Information provided to the Joint State Government Commission by the Department of Aging on December 4, 2017.

¹¹⁵ Ms. Theresa Brown. Personal e-mail to the Joint State Government Commission received on December 4, 2017.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

DEPARTMENT OF HUMAN SERVICES

Medical Assistance (Medicaid)

In state fiscal year 2015-16 – the latest period for which data are available – there were 254,534 total Medicaid recipients with diabetes.¹¹⁸

The Department of Human Services' Office of Medical Assistance Programs oversees the Physical Health component of the HealthChoices Program. The HealthChoices Program is the name of Pennsylvania's mandatory managed care programs for Medical Assistance recipients. Medicaid recipients gain access to medical care and appropriate physical health services through Physical Health Managed Care Organizations.

Regular screenings are a key to successful diabetes management, to prevention, early detection and prompt treatment of dangerous and expensive complications. As reflected in the table below, the number of these critically important screenings for Medicaid patients in the Commonwealth has been growing consistently in recent years.¹¹⁹

HealthChoices Performance Areas Medical Assistance Recipients with Diabetes Average Annual Screenings by Type, 2014-2016			
Type of Screening or Exam	Percentages of Recipients		
	2014	2015	2016
LDL-C	79.1%	retired	retired
Eye	58.1%	56.2%	59.2%
A1C	84.6%	85.5%	86.2%
Nephropathy	83.6%	82.9%	90.0%

¹¹⁸ Information provided to the Joint State Government Commission by the Department of Human Services on November 21, 2017.

¹¹⁹ Information provided to the Joint State Government Commission by the Department of Human Services on November 2, 2017.

Education and outreach are an important part of improving diabetes control and maintenance.

All of the Managed Care Organizations (MCOs) in HealthChoices offer provider education/outreach and member education/outreach concerning diabetes. Some of the provider information offered includes best practices, coding to identify diabetic members, home lab testing and re-testing members with high results. Examples of member education offered are diabetes disease specific education, obtaining screening and follow-up testing, and medication adherence. Examples of member outreach include Diabetes Trac phone text messages, tele-monitoring, tele-retinal in-home screening and community events, which offer Hemoglobin A1C screenings and diabetic eye exams.

Some of the MCOs have hired diabetic navigators who are embedded in practices. These navigators inform providers about their members who are due or overdue for testing. The diabetic navigators also educate members on diabetes, screenings and re-testing, medication adherence, scheduling appointments and ensuring appointments are kept, and assisting with any barriers that the member may have. These interactions are mostly face-to-face; however, they can also occur telephonically.

In addition, some of the MCOs offer Food as Medicine programs through the Metropolitan Area Neighborhood Nutrition Alliance (MANNA), Fresh Food Pharmacy (FFP) and Family Food (FF) programs. These programs provide diabetes education, along with meals for the member and their families.

Lastly, the MCOs are participating with the Health Promotion Council (HPC) and Pennsylvania Community Living Initiative (PA CLI) Leadership Sustainability Group and the National Diabetes Prevention Program Virtual Learning Collaborative Statewide Engagement surrounding diabetes prevention programs.¹²⁰

¹²⁰ Information on HealthChoices education and outreach was provided to the Joint State Government Commission by the Department of Human Services on November 20, 2017.

DIABETES IN SCHOOL CHILDREN: GUIDELINES AND CARE

Diabetes is one of the most common chronic diseases in school-aged children. The number of school students with diabetes type 1 listed at the PADOH website is 6,261; the count includes independent, comprehensive area vocational-technical schools, and charter schools.¹²¹

Managing diabetes safely and effectively throughout the school day and at school-sponsored activities can present a serious challenge for students and school personnel. In a supportive school environment, where school personnel understand the needs of students with diabetes and know how to respond appropriately in emergency situations, this goal can be achieved.

Two Pennsylvania state departments are involved in helping school students who have diabetes: the Department of Health and the Department of Education. The Pennsylvania Department of Education (PDE) is directly responsible for helping these students, primarily those with diabetes type 1. PDE's policies and practices follow the guidelines designed by PADOH. The Pennsylvania Department of Health developed a detailed publication "Diabetes in School Children: Recommendations and Resource Guide for School Personnel" that serves as the primary resource for school faculty and staff. The latest edition of this guide was published in 2016. The guidelines are based on the document "Helping the Student with Diabetes Succeed: A Guide for School Personnel" (2016 edition), created by the National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health. Compiling the guide for Pennsylvania schools, PADOH staff tailored the national guidance and added material to ensure that the recommendations contained in their document "both reflect national best practices and comply with Pennsylvania state laws and education policies."¹²²

¹²¹ Pennsylvania Department of Health. *Students with Medical Diagnosis of Diabetes by District and County*, 7/15/2015,

<http://www.health.pa.gov/My%20Health/School%20Health/Documents/Chronic%20Disease/Diabetes/12-13%20Diabetes%20by%20County.pdf> (accessed February 12, 2018).

¹²² Pennsylvania Department of Health. *Diabetes in School Children: Recommendations and Resource Guide for School Personnel*, 2016,

http://www.health.pa.gov/My%20Health/School%20Health/Documents/11.22.2016%20Diabetes_In_School_Children%20-%20DOH%20v3.pdf (accessed September 19, 2017).

The authors of the guide define its purpose as educating school personnel about effective diabetes management and sharing a set of practices that enable schools to ensure a safe learning environment for students with diabetes, especially those who use insulin to manage the disease. Schools are encouraged to assess the individual situation of each student. The Pennsylvania guide is based on national best practices for creating and ensuring a safe, nurturing learning environment for students with diabetes. The guide is also designed to define and clarify schools' diabetes management roles and responsibilities.¹²³ Accordingly, it includes a summary of state and federal laws related to diabetes management in schools as well as templates for a Diabetes Medical Management Plan (DMMP), Individualized Health Care Plan (IHP), and other required documents.

The school guide is organized in several major sections, augmented by background information, data resources, and tools for school personnel to help students manage diabetes effectively. Section 1 offers an overview of diabetes, with updated information on diabetes equipment, supplies, and smartphone technology for blood glucose monitoring and insulin administration as well as meal planning, carbohydrate (carb) counting, and insulin-to-carb ratios. Section 2 defines the roles and responsibilities of administrators, school nurses, key school staff members, the parents/guardians, and the student with diabetes – all referred to as the members of the school health team. Section 3 contains important tools for helping schools implement effective diabetes management such as samples of DMMP and IHP. Section 4 provides an overview of the federal and state laws that address schools' responsibilities to students with diabetes, including confidentiality requirements. Section 5 contains a glossary of key diabetes terms.

The guide explains why effective diabetes management at school is crucial:

- For the immediate safety of students with diabetes;
- For the long-term health of students with diabetes;
- To ensure that students with diabetes are ready to learn and participate fully in school activities; and
- To minimize the possibility that diabetes-related emergencies will disrupt classroom activities.¹²⁴

Many students are capable of handling all or almost all of their everyday diabetes care tasks by themselves. Others, because of their age or other factors, may need help from school personnel on a regular basis. In addition of the routine care, school personnel must be aware of the possibility of diabetes emergencies and know how to respond properly. School personnel need to be prepared to provide diabetes care at school and at all school-related activities.

¹²³ Ibid.

¹²⁴ Ibid.

Students with diabetes need supportive environments to help them take care of diabetes while they are under school jurisdiction, for example, throughout the school day and at school functions. The guide identifies the following key elements of effective diabetes management in school:

- Assembling a school health team;
- Developing the student's written plans of care (health and education);
- Designating and training school personnel;
- Maintaining optimal blood glucose control;
- Implementing student self-management, when appropriate;
- Recognizing and treating hypoglycemia;
- Recognizing and treating hyperglycemia;
- Operating monitoring equipment;
- Administering medications, such as insulin and glucagon;
- Following an individualized meal plan;
- Promoting regular physical activity;
- Planning for special events, field trips, and extracurricular activities;
- Planning for disasters and emergencies; and
- Dealing with emotional and social issues.¹²⁵

The guide underscores that successful planning and implementation of diabetes management at school depends on collaboration and cooperation of all the members of the school health team, which includes the student with diabetes; his or her parents/guardians; certified school nurse and other school health personnel, administrators; teachers; 504/IEP coordinator; office staff; school psychologist or guidance counselor; trained diabetes personnel; coach, lunchroom, and other school staff members; and transportation director/bus drivers.

¹²⁵ Ibid.

The chart below summarizes the plans needed for effective diabetes management for each school student with diabetes and the school staff responsible for each plan's implementation.¹²⁶

Plan	Contents	Who Prepares It
Diabetes Medical Management Plan (OMMP)	Medical orders: all aspects of routine and emergency diabetes care	Student 's personal diabetes health care team
Individualized Health Care Plan (IHP)	School nursing care plan: How diabetes care, as prescribed in the Diabetes Medical Management Plan, will be delivered in the school	School nurse
Emergency Care Plans for Hypoglycemia and Hyperglycemia	Tool for school staff: how to recognize and treat hypoglycemia or hyperglycemia and what to do in an emergency	School nurse
Section 504 Plan, other education plan, or Individualized Education Program (IEP)	Education plans: address each student's needs for services to manage their diabetes safely and effectively in school where required under Section 504, the Americans with Disabilities Act or the Individuals with Disabilities Education Act	504 team IEP team

Close cooperation between the student's personal diabetes team and the school health system is essential. Diabetes management at school is aimed at keeping blood glucose levels within a target range determined by the student's personal diabetes health care team. In addition to preventing immediate dangers of excessively high or low sugar and averting or delaying serious complications of diabetes in the long term, maintaining optimal blood glucose control can also help to optimize the student's ability to learn by avoiding the effects of hypoglycemia and hyperglycemia on cognition, attention, and behavior.

¹²⁶ Ibid.

The guide specifically cautions school personnel that “hypoglycemia can affect attention, mood, and ability to follow directions and therefore can be mistaken for misbehavior.”¹²⁷ The guide identifies hypoglycemia as the greatest immediate danger to students with diabetes and includes a detailed description of the symptoms of hypoglycemia and the actions required on the part of school personnel in case they observe any of them. Hyperglycemia signs and treatment are reviewed as well.

The guide specifies in detail the fundamental components of diabetes management training for school personnel, describing three levels of training and providing links to relevant training resources as highlighted in the following chart:¹²⁸

Level 1. Diabetes Overview and How to Recognize and Respond to an Emergency Situation	
Who	All school personnel
What	<ul style="list-style-type: none"> • General overview of diabetes • How to recognize and respond to signs and symptoms of hypoglycemia and hyperglycemia • Whom to contact for help in an emergency
Level 2. Diabetes Basics and What to Do In an Emergency Situation	
Who	Classroom teachers and all school personnel who have responsibility for the student with diabetes during the school day
What	<ul style="list-style-type: none"> • Content from level 1 • Specific instruction on the Emergency Care Plans for Hypoglycemia and Hyperglycemia • How to activate Emergency Medical Services in case of a diabetes emergency • Roles and responsibilities of Individual staff members • Expanded overview of diabetes • Impact of hypoglycemia or hyperglycemia on behavior and learning • Tips and planning needed for the classroom and for special events • The student's health care and education plans • Legal rights of students with diabetes
Level 3. General and Student Specific diabetes Care Tasks	
Who	Trained diabetes personnel
What	<ul style="list-style-type: none"> • Content from Level I and level 2 training • General training on diabetes care tasks specified in the student's Diabetes Medical Management Plan • Student specific training, using the student's equipment and supplies for each diabetes care task

¹²⁷ Ibid.

¹²⁸ Ibid.

Various blood glucose meters and various types of insulin are described, along with several ways of administering insulin and relevant medications.

Nutrition and meal planning recommendations are discussed as well as regular physical activity and advance planning for special events such as field trips and school-sponsored extracurricular activities held before or after school.

The guide includes helpful Actions sheets that can be copied and distributed to the appropriate staff members, the parents/guardians, and students with diabetes who are able to take responsibility for their self-management.

New opportunities for management of students with diabetes have been opened by Act 86 of 2016, which amended the Public School Code with a number of provisions related to diabetes education and care in Pennsylvania schools.¹²⁹

Act 86 is a voluntary option for schools. It is not mandated, but if schools choose to opt into Act 86, they must ensure compliance with all the requirements in the law and resource guide and have the appropriate policies, permissions, agreements, and orders in place.

Act 86 directs the Department of Health, in collaboration with the Department of Education, to establish educational modules and guidelines for the instruction of school employees in diabetes care and treatment and to make modules and guidelines available on its publicly accessible internet website. Specifically in regards to diabetes, “at a minimum, the educational modules shall include review of the responsibilities and instruction in:

1. An overview of all types of diabetes.
2. Means of monitoring blood glucose.
3. The symptoms and treatment for blood glucose levels outside of target ranges as well as symptoms and treatment for hypoglycemia, hyperglycemia and other potential emergencies.
4. Techniques on administering glucagon and insulin.”¹³⁰

Act 86 permits school nurses, in consultation with the chief school administrator or a designee, to identify at least one school employee in each school building attended by a student with diabetes to be designated in a student’s service agreement or IEP to administer diabetes medication, use diabetes monitoring equipment, and provide other diabetes care. If a school building attended by a student with diabetes does not have a full-time school nurse, the chief school administrator may consult with the school nurse assigned to that school building to identify at least one school employee.

¹²⁹ Added by §§ 6.1 and 6.2 of the Act of July 13, 2016 (P.L.716, No.86). 24 P.S. §§ 14-1401 to 14-1414.8.

¹³⁰ Public School Code, Act of March 10, 1949 (P.L.30, No.14). § 1414.3. 24 P.S. § 14-1414.3.

The identified employee should not be the school nurse, and does not need to be a licensed health care practitioner. The identified employee has the right to decline the assignment. If the identified employee accepts the responsibility and related directives, he or she is required to complete successfully the above-mentioned education modules or annual education offered by a licensed health care practitioner with expertise in the care and treatment of diabetes that includes substantially the same information as outlined in the modules.

The school entity must receive written authorization from both the student's health care practitioner and parent or guardian that an educated school employee, who is not a licensed care practitioner, may administer specified medications.

A parent or guardian of a student with diabetes who desires that the student receive diabetes-related care and treatment in a school setting must provide the school entity with written authorization for the care and instructions from the student's health care practitioner, consistent with the school entity's policies regarding the provision of school health services. All diabetes-related care provided to students must be consistent with the school health program established by the governing body of the school entity and any accommodations outlined in a student's service agreement.

Act 86 mentions specifically that "a student's service agreement may require a school entity to provide the driver of a school bus or school vehicle, who provides transportation to a student with diabetes, with an information sheet that:

1. Identifies the student with diabetes.
2. Identifies potential emergencies that may occur as a result of the student's diabetes and the appropriate responses to such emergencies.
3. Provides the telephone number of a contact person in case of an emergency involving the student with diabetes."¹³¹

A parent or guardian of a student with diabetes who requests that the student possess and self-administer diabetes medication and operate monitoring equipment in a school setting must provide the school entity with a written statement from the student's health care practitioner with detailed information regarding the name of the drug, the dose, and the times when the medication is to be taken or the monitoring equipment to be used, along with the specified time period for which the medication or monitoring is authorized to be used. The statement must include the diagnosis or reason the medication or monitoring is needed. In addition, the student's health care practitioner must indicate the potential of any serious reaction to the medication that may occur as well as any necessary emergency response. The student's health care practitioner must also state whether the student is competent to self-administer the medication or monitoring equipment and whether the student is able to practice proper safety precautions for the handling and disposal of the medication and monitoring equipment. The school nurse must confirm that the student has demonstrated that the student is capable of self-administration of the medication and use of the monitoring equipment. The parent or guardian must submit a written request that the school entity comply with the instructions of the student's health care provider. The student must acknowledge in writing that he or she has received instruction from his or her health care practitioner on proper

¹³¹ Ibid.; § 1414.4 (c). 24 P.S. § 14-1414.4 (c).

safety precautions for the handling and disposal of the medication and the monitoring equipment, that the student will not allow other students access to the medication and monitoring equipment, and that the student understands appropriate safeguards.

A school entity may revoke or restrict a student's privileges to possess and self-administer diabetes medication and operate monitoring equipment due to noncompliance with school rules and provisions of a student's service agreement, IEP or due to demonstrated unwillingness or inability of the student to safeguard the medication and monitoring equipment from access by other students. If a school entity prohibits a student from possessing and self-administering diabetes medication and operating monitoring equipment, the school entity must ensure that diabetes medication and monitoring equipment is appropriately stored in a readily accessible place in the school building attended by the student. The school nurse and other identified school employees must be notified about the location of the diabetes medication and monitoring equipment and about means to access them.

Act 86 states that nonpublic school may comply with the education of school employees and provision of diabetes-related care to a student with diabetes as required by the act.

YMCA'S DIABETES PREVENTION PROGRAM

YMCAs have become an active partner in chronic disease prevention and maintenance. In 2016, the YMCA Center for Healthy Living was founded in Harrisburg. The Center facilitates programs in central Pennsylvania and beyond. According to the Center's leadership, its vision is "to provide programming and community to those suffering with chronic diseases, and to help educate the community about healthy habits that prevent chronic diseases from taking hold."¹³² The Center works together with local YMCAs to provide the programs that allow the community to take advantage of the YMCA's facilities. YMCAs have the equipment and spaces to provide high-quality programs, and the staff that has access to training through the YMCA of the USA.

Pennsylvania YMCAs play a major part in increasing awareness of type 2 diabetes and prediabetes and helping people to reduce their risk for developing the disease. Nationwide, more than 200 Ys assist people in achieving this goal with the YMCA's Diabetes Prevention Program.¹³³

The YMCA's Diabetes Prevention Program uses a CDC-approved curriculum and is part of the CDC-led National Diabetes Prevention Program. It is a small-group, long-term program that encourages healthier eating habits and increasing physical activity with the goal of reducing or delaying the risk of developing type 2 diabetes. DPP is described in detail in an earlier section of this report.¹³⁴ The YMCA's Diabetes Prevention Program is available to all qualifying individuals regardless of their insurance status and their Y membership or lack thereof.

By the end of December 2016, the YMCA's Diabetes Prevention Program had served more than 51,000 participants at more than 1,600 sites in 47 states across the country, with the vast majority of participants reporting that as result of their participation in the program, they reduced their portion sizes, increased their physical activity, and improved their overall health.¹³⁵

¹³² YMCA Center for Healthy Living. *Chronic Disease: The YMCA Community of Support*. Harrisburg, PA.

¹³³ *YMCA's Diabetes Prevention Program*, <http://www.ymca.net/diabetes-prevention/> (accessed October 27, 2017).

¹³⁴ See P. 15.

¹³⁵ YMCA. *Measurable Progress, Unlimited Support. Diabetes Prevention Program Fact Sheet: February 2017*.

In the Commonwealth, the following Ys offer the YMCA's Diabetes Prevention Program, as of June 2017:

- Beaver County YMCA, New Brighton
- Central Bucks Family YMCA, Doylestown
- Community YMCA of Easter Delaware County, Lansdowne
- Franklin/Grove City YMCA
- Freedom Valley YMCA, Philadelphia
- Greater Susquehanna Valley YMCA, Sunbury
- Greensburg YMCA
- Harrisburg Area YMCA
- Lebanon Valley Family YMCA
- Ligonier Family YMCA
- Regional Family YMCA of Laurel Highlands, Mt. Pleasant
- River Valley Regional YMCA, Williamsport
- Valley Points Family YMCA, New Kensington
- Wilkes-Barre Family YMCA
- YMCA of Centre County, Bellefonte
- YMCA of Greater Brandywine, West Chester
- YMCA of Greater Pittsburgh
- York & York County YMCA.¹³⁶

The YMCA's leadership in Pennsylvania would like to expand the program and is working on securing the funds to take the program statewide and have it placed in all of the Y's across Pennsylvania as they have found the program to be very effective and have received many testimonials from its participants. The program leaders are currently exploring new ways to reduce attrition, to encourage participation, and to increase access to the program in rural areas.

¹³⁶ Data provided to the Joint State Government Commission by Ms. Megan Maurer, Program Director of Healthy Living, Harrisburg Area YMCA, in the personal e-mail of October 25, 2017.

PENNSYLVANIA DIABETIC EYE HEALTH ALLIANCE (PDEHA)

One of the challenges in addressing the diabetes problem is early diagnosis. Even when the disease cannot be prevented, diagnosing it early and starting the appropriate treatment promptly can bring significantly better outcomes and help avoid or delay devastating and expensive complications. In many cases, type 2 diabetes sets in without causing any apparent symptoms, and a person afflicted with it becomes aware of it only after it has done serious damage to the body and has affected multiple organs. Various kinds of medical professionals sometimes alert a patient that he or she has diabetes when they examine the patient for a different condition or do a regular exam. One of the areas where such a diagnosis at times occurs is vision care. A regular eye exam may reveal changes in the retina that indicate diabetes, and an optometrist becomes the unlikely messenger who is the first to inform the patient about his unexpected diagnosis and may guide him to proper treatment for diabetes.

In an effort to assist the growing number of patients with diabetes, the Pennsylvania Optometric Association (POA) has created a network of members who specialize in the identification and treatment of ocular manifestations of diabetes – the Pennsylvania Diabetic Eye Health Alliance (PDEHA). This is a program that specifically addresses the optometric evaluation of the patient with diabetes and disease management issues such as timeliness, accessibility of care, professional communication, quality management, delivery system, cost efficiencies, and clinical outcomes. The program is designed “to deliver comprehensive and expedient diabetic eye care and intercommunicate the information to all those involved in the patient’s care.”¹³⁷

Based on the 2008 Pennsylvania Optometric Association House of Delegates resolution, PDEHA pursues the following objectives:

- To develop and implement a statewide program to ensure the provision of timely optometric care to the diabetic patient and to communicate findings to the other members of the diabetic patient’s health care team.
- Improve care to underserved diabetic patients.
- Demonstrate the third-party payers’ commitment to and role in providing quality optometric care to the diabetic patient.
- Improve HEDIS scores for commercial payers.
- Improve PQRI reporting.
- Encourage promotion of and participation in PDEHA of the third-party payers and providers.¹³⁸

¹³⁷ Pennsylvania Optometric Association. *The Pennsylvania Diabetic Eye Health Alliance*, <http://pennsylvania.aoa.org/x18398.xml> (accessed November 13, 2017).

¹³⁸ Ibid.

PDEHA has been actively seeking innovative ways of collaborating with insurance companies, and, in view of the leaders of the Pennsylvania Optometric Association, has already achieved promising results in increasing recapture rate and facilitating care.¹³⁹

PDEHA has teamed up with various insurance providers across the Commonwealth to identify diabetic patients who have not received their annual diabetic eye health examination. As a result of these partnerships, insurance carriers have identified those insured who have failed to have a documented diabetic eye exam. Their lists are then matched to the PDEHA member who last examined the patient. By sharing these lists, PDEHA has been able to return more than 50 percent of the patients lost to follow-up to regular care (a factor known as “recapture rate” among professionals). This return assists the insurance industry in meeting its benchmarks, thereby generating significant revenue enhancements on the front end. Additionally, this return to care helps avoid complications associated with the disease. When such complications develop, they significantly increase the cost of providing care, so avoiding them allows insurance companies to save revenues in the long term as well. “Most importantly,” as noted by Mr. Joseph A. Ricci, Executive Director of the Pennsylvania Optometric Association, “the return to care greatly improves the quality of health of the patient, allowing for many more productive, vital years of life to be enjoyed with family and friends.”¹⁴⁰

It appears that POA’s efforts to expedite diabetic care delivery and collaborate with the third-party payers deserve further study and support.

¹³⁹ Information provided to the Joint State Government Commission by Mr. Joseph A. Ricci, Esq., Executive Director of the Pennsylvania Optometric Association, and Dr. William E. Boshinski.

¹⁴⁰ Personal e-mail to the Joint State Government Commission from Mr. Joseph A. Ricci, Esq., Executive Director of the Pennsylvania Optometric Association, received on March 6, 2018.

RECOMMENDATIONS

General Assembly Responses

Advisory Committee on Diabetes

The General Assembly should consider establishing an ongoing statewide advisory committee (or council) on diabetes. It may be similar to the Renal Disease Advisory Committee that was established in Pennsylvania by the Act of June 23, 1970 (P.L.419, No.140); 35. P.S. § 6204).

Advisory committees of this kind typically consist of members appointed by the Governor and the General Assembly. The President Pro Tem of the Senate, the Minority Leader of the Senate, and the Speaker of the House of Representatives and the Minority Leader of the House each get an equal number of appointments. The legislation may designate certain groups that can forward to appointing authorities the candidates for membership. The advisory committee members work without pay, but receive reimbursement for expenses.

Advisory committees or councils may facilitate expert advice on a continuing basis and may utilize executive staff to help develop recommendations. They can call upon departmental staff to gather information that will help refine and evaluate recommendations.

Similar councils in other states, such as the Texas Diabetes Council, have proven successful in promoting diabetes awareness and prevention throughout the state; facilitating collaboration between state agencies, public and private health care organizations; developing programs for the early detection and diagnosis of diabetes and for the prevention of type 2 diabetes; data collection; assessment and evaluation of existing programs.

Legislation Previously Introduced in Pennsylvania

1. 2015 House Bill 1367: Referred to Finance Committee, June 30, 2015
(expired in committee)
2. 2015 House Bill 1366: Referred to Education Committee, June 24, 2015
(expired in committee)
3. 2015 House Bill 1365: Referred to Education Committee, June 24, 2015
(expired in committee)
4. 2015 Senate Bill 704: Referred to Banking and Insurance Committee, April 7, 2015
(expired in committee)

Other Recommendations

Awareness and Access to Care

- Raise public awareness about diabetes risk factors, prevention for those who are at risk, and management for those who have diabetes.
- Unify diabetes prevention and management efforts.
- Increase access to evidence-based diabetes self-management education.
- Strengthen the overall system of diabetes clinical care.
- Improve data collection, evaluation, and surveillance capacity.
- Intensify efforts to prevent diabetes-related complications.

Objectives listed in Healthy People 2020 may serve as useful benchmarks in assessing progress and elaborating on specific recommendations to improve diabetes clinical care at various levels. These objectives include the following:

- Reduce the death rate among persons with diabetes.
- Reduce the rate of lower extremity amputations in persons with diagnosed diabetes.
- Improve glycemic control among persons with diabetes, specifically
 - Reduce the proportion of persons with diabetes with an A1C value greater than 9, and
 - Increase the proportion of persons with diabetes with an A1C value less than 7.
- Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.
- Increase the proportion of adults with diabetes who have at least an annual foot examination.
- Increase the proportion of adults with diabetes who have an annual dilated eye examination.
- Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least twice a year.
- Increase the proportion of adults with diagnosed diabetes who obtain an annual urinary microalbumin measurement.
- Increase the proportion of persons with diabetes whose condition has been diagnosed.
- Increase the proportion of persons at high risk for diabetes and prediabetes who report increasing their levels of physical activity.
- Increase the proportion of persons at high risk for diabetes and prediabetes who report trying to lose weight.¹⁴¹

¹⁴¹ *Healthy People 2020: Diabetes*, <https://www.healthypeople.gov/2020/topics-objectives/topic/diabetes/objectives> (accessed August 31, 2017).

Diabetes Screening

- Ensure consistent following of the ADA screening guidelines for adults.
- Consider broadening risk-based screening for type 2 diabetes or prediabetes in asymptomatic children and adolescents who are overweight or obese and have one or more additional risk factors for diabetes.
- Motivate persons with prediabetes to get tested.

Prevention

- Expand access and increase referrals to and reimbursement for CDC-recognized lifestyle change programs.
- Focus resources on high-risk individuals as, according to research, structured lifestyle interventions are most cost-effective when applied to high-risk adults rather than when applied to those of moderate or low risk.
- Offer alternative diabetes prevention program settings (online and face-to-face).
- Explore and utilize various ways to encourage participants to stick with the program and reduce attrition.
- Motivate persons with prediabetes to find and join a diabetes prevention program.
- Reach out to various communities by selecting diabetes educators who share the cultural background with the target population as they have better understanding of the existing challenges and can win their clients' trust.
- Focus on consistent, everyday activities rather than one-time flashy, expensive events.

Diabetes Management

- Practice a holistic, individualized approach to treatment; develop a comprehensive, individualized diabetes care plan that accounts for the whole patient and the many variables that can impact his or her ability to successfully manage diabetes, as this leads to better health outcomes.
- Incentivize people who have diabetes to better manage their health by making some diabetic drugs and testing supplies available free of charge to participants (as done in some states, for example, Kentucky).
- Seek various ways to expand access to diabetes education in rural areas.

State Employees

- Offer a cost-effective diabetes type 2 prevention program to state employees.

Older Adults

- Endorse and promulgate the latest ADA guidelines regarding older adults with diabetes with the purpose to reduce the risk of hypoglycemia and avoid overtreatment.

Gestational Diabetes

- Ensure that Medicaid-managed care plans screen all pregnant women they serve for gestational diabetes and that all those diagnosed receive appropriate management (medical nutrition therapy, self-management education, and supplies) and care to prevent complications, hospitalizations, and potential neonatal intensive care unit costs for the newborn.
- Actively seek solutions to decrease poor birth outcomes experienced by children born to mothers with gestational diabetes due to lack of adequate diabetes management.
- Ensure that after they deliver the baby, women in Medicaid-managed care plans who were diagnosed with gestational diabetes are referred to a local evidence-based lifestyle change program, such as DPP, to help prevent or delay the onset of type 2 diabetes.

THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE RESOLUTION

No. 936 Session of
2014

INTRODUCED BY OBERLANDER, LONGIETTI, BAKER, BOBACK, V. BROWN,
CALTAGIRONE, CAUSER, COHEN, D. COSTA, DONATUCCI, FLECK,
GIBBONS, GINGRICH, GODSHALL, GRELL, GROVE, HARHART, HEFFLEY,
KAUFFMAN, KILLION, KIRKLAND, KOTIK, KULA, LUCAS, MAJOR,
MENTZER, MILLARD, MURT, MUSTIO, O'BRIEN, READSHAW, SONNEY,
SWANGER, TALLMAN, THOMAS, TOBASH, WHITE, YOUNGBLOOD, SCHLEGEL
CULVER, JAMES, BENNINGHOFF, BRIGGS, PICKETT, WATSON,
McCARTER, PYLE AND QUINN, JULY 1, 2014

AS REPORTED FROM COMMITTEE ON HEALTH, HOUSE OF REPRESENTATIVES,
AS AMENDED, SEPTEMBER 17, 2014

A RESOLUTION

1 Directing the Joint State Government Commission, in
2 collaboration with certain other State departments and
3 agencies, to develop a report on diabetes and to issue the
4 report to the House of Representatives.

5 WHEREAS, More than 990,000 adults in this Commonwealth have
6 been diagnosed with diabetes; and

7 WHEREAS, An estimated 517,000 Pennsylvanians are undiagnosed;
8 and

9 WHEREAS, An estimated 3.27 million Pennsylvanians are at risk
10 of developing diabetes; and

11 WHEREAS, Diabetes and its complications are the seventh
12 leading cause of death in this Commonwealth; and

13 WHEREAS, Diabetes will cost Pennsylvanians an estimated ~~\$1.7~~ <--
14 \$14.7 billion in 2015 and an estimated \$18.4 billion by the year <--
15 2025; and

1 WHEREAS, Statistics show that with appropriate management and
2 early identification, costs related to diabetes can be
3 significantly reduced; therefore be it

4 RESOLVED, That the House of Representatives direct the Joint
5 State Government Commission to submit a report on diabetes that
6 identifies goals and benchmarks and includes plans to reduce the
7 incidence of diabetes, improve diabetes care and control
8 complications associated with diabetes; and be it further

9 RESOLVED, That the Joint State Government Commission develop
10 the report on diabetes in collaboration with all of the
11 following:

- 12 (1) The Department of Health.
- 13 (2) The Department of Public Welfare.
- 14 (3) The Department of Education.
- 15 (4) The State Employees' Retirement System.
- 16 (5) The Health Care Containment Council.
- 17 (6) Any additional State departments or agencies the
18 commission deems appropriate to develop, research and prepare
19 the report;
20 and be it further

21 RESOLVED, That the Joint State Government Commission assess
22 the financial impact and reach diabetes has on the residents of
23 this Commonwealth and the State departments and agencies
24 collaborating on the report, and that the assessment include all
25 of the following:

- 26 (1) The number of individuals with diabetes impacted or
27 covered by the State department or agency.
- 28 (2) The number of individuals with diabetes and family
29 members impacted by prevention and diabetes control programs
30 implemented by the State department or agency.

1 (3) The financial toll or impact diabetes and its
2 complications placed on State department or agency programs.

3 (4) The financial toll or impact diabetes and its
4 complications placed on the State department or agency
5 programs in comparison to other chronic diseases and
6 conditions;

7 and be it further

8 RESOLVED, That the Joint State Government Commission conduct
9 an assessment of the benefits of implemented programs and
10 activities aimed at controlling diabetes and preventing the
11 disease, and that the assessment include the amount and source
12 for any funding from the Federal Government and the General
13 Assembly for programs and activities aimed at reaching those
14 with diabetes; and be it further

15 RESOLVED, That the Joint State Government Commission provide
16 a description of the level of coordination existing between
17 State departments and agencies on activities, programmatic
18 activities and messaging on managing, treating or preventing all
19 forms of diabetes and its complications; and be it further

20 RESOLVED, That the Joint State Government Commission provide
21 detailed plans and recommendations for the control and
22 prevention of diabetes for consideration by the General
23 Assembly, and that the plans and recommendations do all of the
24 following:

25 (1) Identify proposed action steps to reduce the impact
26 of diabetes, pre-diabetes and related diabetes complications.

27 (2) Identify expected outcomes of the action steps
28 proposed in the following biennium.

29 (3) Establish benchmarks for controlling and preventing
30 relevant forms of diabetes; and be it further

1 RESOLVED, That the Joint State Government Commission develop
2 a detailed budget blueprint identifying needs, costs and
3 resources required to implement the plans and recommendations of
4 each department or agency, and that the blueprint include a
5 budget range for all options presented in the recommendations
6 identified by each department or agency for consideration by the
7 General Assembly; and be it further

8 RESOLVED, That the Joint State Government Commission provide
9 the initial report on the estimated number of individuals with
10 diabetes, pre-diabetes or related diabetes ~~within~~ WHO ARE SERVED <--
11 BY each department or agency and any additional information the
12 commission deems appropriate to the General Assembly by March 1,
13 2015; and be it further

14 RESOLVED, That the Joint State Government Commission submit a
15 ~~final~~ COMPREHENSIVE report on the items listed in this <--
16 resolution to the Diabetes Caucus of the House of
17 Representatives and the Human Services Committee AND THE HEALTH <--
18 COMMITTEE of the House of Representatives by September 15, 2015,
19 and by September 15 of each odd-numbered year thereafter
20 following the release of the initial report.