HIGHMARK. FOUNDATION

Improving Access to Diabetes Care & Services in Pennsylvania through Coordinated Strategies

About the Highmark Foundation

The Highmark Foundation, created in 2000 as an affiliate of Highmark Inc., is a charitable organization and a private foundation that supports initiatives and programs aimed at improving community health. The foundation's mission is to improve the health, well-being and quality of life for individuals who reside in the Pennsylvania communities served by Highmark Inc. The foundation awards two types of grants: Highmark Healthy High 5, which includes a focus on the health and well-being of children in the areas of physical activity, nutrition, self-esteem, bullying and grieving; and its traditional four areas of general health focus, which include chronic disease, communicable disease, family health and service delivery systems. Where possible, the foundation looks to support evidence-based programs that impact multiple counties and work collaboratively to leverage additional funding to achieve replicable models. For more information about the Highmark Foundation, visit www.highmark.com.

Executive Summary

This brief, *Improving Access to Diabetes Care and Services in Pennsylvania through Coordinated Strategies*, is part of a series that addresses issues of importance to the Highmark Foundation and its commitment to the health, well-being and quality of life of individuals and communities in the 49-county region of Pennsylvania served by Highmark Inc.

This brief will discuss community-based programs and services that have been created to reduce the effects of diabetes. It is important to engage individuals in integrated programs that include comprehensive, multi-level strategies, particularly for minorities, the uninsured and the underinsured. These populations traditionally are underrepresented in diabetes prevention programs, yet they have the highest incidence of diabetes.

Since 2004, the Highmark Foundation has significantly influenced seven programs with grants totaling $1.6 million to four hospitals, one Federally Qualified Health Center, a spiritual and health-based wellness project and a university located in Western and Central Pennsylvania. The programs used three strategies: culturally competent care, support groups and a comprehensive coordinated clinical approach. These strategies have the potential for replication, and they demonstrate new and sustainable ways to reduce the prevalence of diabetes and illustrate the effectiveness of early intervention and preventive health programs.

This brief will examine ways in which grantmaking supports both organizations and programs that provide care and treatment and that demonstrate effectiveness for reducing the incidence of diabetes. The overall goal of these programs is to increase access to diabetes care and services for minorities and underserved individuals in Western and Central Pennsylvania.

Background

Diabetes is a chronic disease that affects millions of people in the United States, and was the seventh leading cause of death listed on United States death certificates in 2006.[1] Taking into account the significant number of undiagnosed cases and cases of impaired glucose tolerance, one in seven Americans either has diabetes or is at high risk for developing it. Despite a high-quality evidence base to aid providers in treating diabetes and screening for its complications, the quality of diabetes care remains less than optimal, with many patients not receiving established protocols of care (such as eye and foot screening) or achieving optimal outcomes (such as controlled glycosylated hemoglobin levels, or HbA1c).[2]

Type 2, the most common form of diabetes, is emerging as a worldwide public health epidemic. There are 23.6 million children and adults in the United States, or 8 percent of the population, affected by diabetes. Approximately 17 million persons are diagnosed 5.7 million are undiagnosed and 57 million are pre-diabetic. Moreover, in 2007, 1.6 million new cases were diagnosed in people 20 years or older. The total prevalence of diabetes increased 13.5 percent from 2005-2007. Only 24 percent of diabetes is undiagnosed, a reduction of 30 percent in 2005 from 50 percent 10 years ago.[3,4]

The Impact of Diabetes

Diabetes is a group of diseases marked by high levels of blood glucose resulting from defects in insulin production, insulin action or both.[5] The cause of diabetes continues to be a mystery, although both genetics (including age, race, and gender) and environmental factors (such as obesity, poor nutrition and sedentary lifestyle) are risk factors for type 2 diabetes.[6] While genetics cannot be changed, environmental factors can be reduced through a variety of strategies before they become life threatening.

Compounding the problem is that diabetes can lead to serious complications, including heart disease and stroke, hypertension, visual impairment, amputations, dental disease, pregnancy-related complications and premature death. Receiving preventive care in a timely manner is helpful in reducing co-morbid conditions resulting from diabetes. A one-point change in HbA1c significantly reduces the risk of diabetes complications or co-morbidity.[7]

Economics of Diabetes

The cost of diabetes is staggering nationally, regionally and locally. People with diabetes [diagnosed and undiagnosed] use more health resources and the risk of death is greater. While data to support the economic costs of diabetes is available nationally, it is not as extensive on regional or local levels. There is no readily available ideal data source for estimating health resource use associated with diabetes.[8]

- United States: The national cost of diabetes in the United States in 2007 exceeded $174 billion. This estimate includes direct costs of $116 billion in excess medical expenditures attributed to diabetes and $58 billion in reduced national productivity. The largest component of medical expenditures attributed to diabetes is inpatient care (50 percent of the total cost). The largest indirect cost is reduced workplace productivity ($30.5 billion). The actual national burden of diabetes is likely to exceed the estimated $174 billion because of the social costs of intangibles such as pain and suffering and care provided by non-paid caregivers.[9]

- Pennsylvania: The aggregate costs of diabetes in Pennsylvania exceeds $6 billion. This estimate includes medical costs of $4.5 billion and indirect costs of $2.3 billion.[10] Table 1 shows the economic costs of diabetes to the counties in which Highmark Foundation-funded programs were delivered. The total cost of diabetes, including medical and indirect costs, for 1.8 million people was approximately $1.7 billion.[11] The economic burden in these counties is significant, particularly in the less-populated and rural counties.

County	Total Population	Total Diabetes Deaths	Death Rate	Economic Cost
Allegheny	1,223,411	1,111	21.7	$403,400,000
Cambria	146,967	149	22.6	$336,300,000
Dauphin	254,176	166	19.2	$354,800,000
Fayette	145,760	217	35.6	$366,500,000
Somerset	78,508	77	23.2	$336,300,000
TOTAL	1,848,822	1,720		$1,797,300,000

Impact of Diabetes in Pennsylvania

The impact of diabetes in Pennsylvania is similar to that of the United States. The prevalence, especially for type 2, continues to increase. Diabetes affects 760,000, or 6.1 percent of the population.[12] The 2008 Health Profile for Pennsylvania lists diabetes as the sixth underlying cause of death (after controlling for age) for 10,357 Pennsylvania residents, for a death rate of 23.4 percent.[13] The disease burden of diabetes for Pennsylvania minorities is also comparable to that of the United States. The estimated prevalence of diabetes for white, non-Hispanic is 7.6 percent, for black, non-Hispanic, 10.6 percent, and for Hispanic, 8.9 percent.[14]

Figure 1: Diabetes Mortality Rate in Pennsylvania

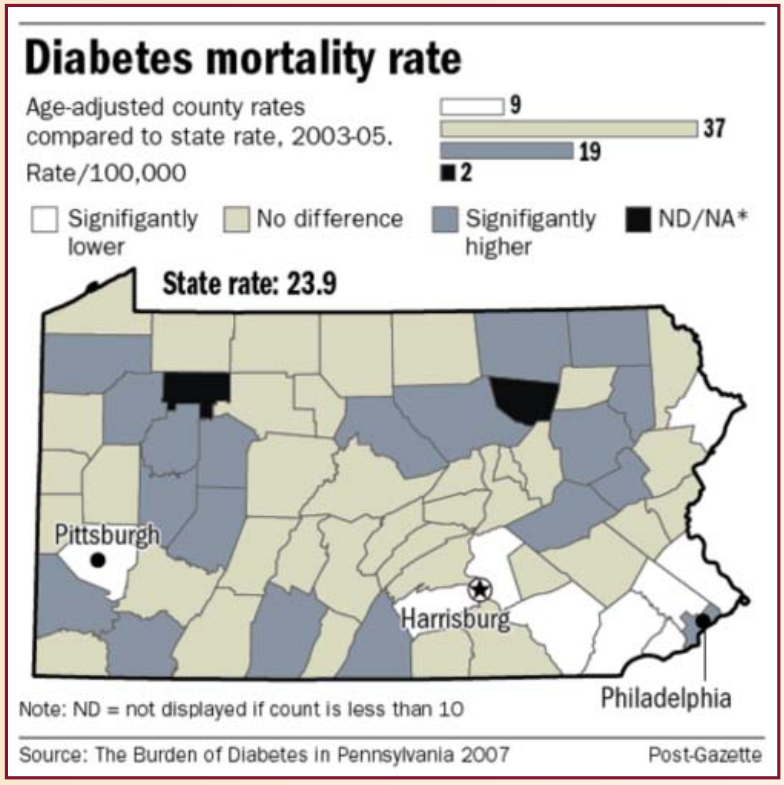

Figure 1 illustrates the impact of diabetes across counties in the state of Pennsylvania. Of the 67 counties, nine have diabetes rates significantly lower than that of the state, 37 counties show no difference, indicating diabetes rates are comparable to the state, 19 counties have significantly higher rates and 2 counties have counts of less than 100 people affected by diabetes. Respectively, these counties (Sullivan and Forest) are entirely rural and the least populated. The diabetes mortality rate for Pittsburgh is significantly lower than that of the state, while the rate for Philadelphia is significantly higher than that of the state. The central part of the state has a higher rate of mortality from diabetes than the western part of the state.

Highmark Foundation's Approach to Addressing Diabetes

The Highmark Foundation recognizes the severe burden placed on individuals and their communities by diabetes and its associated co-morbidities. Through grant support, the Highmark Foundation demonstrates its commitment to reducing the prevalence of diabetes and its co-morbidities, thereby enabling organizations to increase the quantity and quality of programs and services. The purpose for supporting these organizations is to assist with reducing the effects of diabetes, keeping people healthy and improving quality of life through prevention programs. Sustainability is critical in order to ensure that access to treatment and education continues after funding. The three programs for which funding concluded are all self-sustaining.

Since 2004, the Highmark Foundation has supported seven evidence-based programs[15] located in five counties in Western and Central Pennsylvania with grants totaling $1.6 million to four hospitals, one Federally Qualified Health Center, a spiritual and health-based wellness project and a university. Outcomes from these programs are used to make decisions and to improve diabetes care. These programs were developed with the goal of long-term behavior change and improved health outcomes for mostly uninsured participants.

One of the most effective outcomes to demonstrate overall success is reduction of a person's HbA1c levels because it is less difficult to measure, gives a picture of a person's control of average blood glucose for the past two or three months, shows how healthy choices can make a difference in diabetes control and confirms self-testing results or blood test results by the doctor. The results of the HbA1c test determine the extent to which a treatment plan is effective in controlling blood glucose.[16] Patients do not achieve blood glucose goals for the following reasons: physicians do not set appropriate glycemic targets; type 2 diabetes is progressive – what works now may not work in the future; the type of medications used and/or the doses are not appropriate for gender or ethnicity; and insulin therapy is only used as a threat.[17]

Three strategies undertaken by these organizations to improve health outcomes for underserved diabetic populations include culturally specific care, support groups and comprehensive care and supportive medical services.

- Centers for Healthy Hearts and Souls meets the needs of minority populations with the goal of eliminating health disparities in community-based settings. Although its overall focus is chronic disease, one-third of its project activities targets minority diabetics. Participants are engaged in organized diabetic support groups that build skills, attitudes and knowledge, and teach participants how to live with diabetes through education, wellness activities, fitness activities and self-assessment.

- Hamilton Health Center made diabetes care accessible for uninsured participants by delivering coordinated, comprehensive and supportive services (dietitian, podiatrist, ophthalmologist and dentist) at the same visit through the Healthy Outcomes Programs for Uninsured Diabetics.

- Miners and Meyersdale Medical Centers programs recently began on June 1, 2009, and incorporate prevention and treatment strategies to prevent or delay diabetes and co-morbidities in the rural high-risk communities. Interim outcomes are expected in December 2009.

- PinnacleHealth System demonstrated significant improvement in HbA1c levels and diabetes-related complications using culturally specific education tailored to African Americans and Hispanics presented by two educators of the same racial groups. Using this technique also contributed to the overall success of the program. The ultimate goals are long-term behavior change and improved health status through diabetes self-management.

- Uniontown Hospital established a diabetes program that provides coordinated services, including access to an endocrinologist in a rural county where services previously did not exist.

- An academic institution, University of Pittsburgh Graduate School of Public Health - Center for Minority Health created The Healthy Black Family demonstration project, which is currently delivered by two community-based organizations. It provides opportunities and resources for minority individuals and families to reduce the risk of heart disease and diabetes by providing seamless access to health promotion and disease prevention services for those at risk for developing heart disease, diabetes and hypertension.

Table 2 shows outcomes from Highmark Foundation grants to diabetes programs in Pennsylvania. The overall goal of these programs is to improve access to services for populations most at-risk for diabetes.

Table 2: Highmark Foundation Grants to Diabetes Programs in Pennsylvania

Grantee	Amount	Purpose	Geographic Area	Status	Outcomes
Centers for Healthy Hearts and Souls	$246,000	Expansion of the Healthy Individual, Family Community Program	Western PA (Allegheny County)	Active (2008-2010)	Approximately 25 people enrolled in diabetes support and education activities. Baseline data collected not yet analyzed.
Hamilton Health Center	$250,000	Continuation of the Healthy Outcomes Program for Uninsured Diabetics	Central PA (Dauphin County)	Active (2007-2010)	The Healthy Outcomes Program is showing evidence of success in improving diabetic outcomes: At six months, the average decrease in HbA1c levels was approximately 1.0 percent; the highest decrease was 4.3 points and the lowest decrease was 0.1 points. Specifically, 8 percent showed a decrease of 1.1-4.3 points and 20 percent showed a decrease of .1 - .7 points. This change in HbA1c levels shows that the Healthy Outcomes Program enhances Hamilton Health Center's ability to provide diabetes care to more than 200 uninsured patients than it normally would without the program. Participants reported being empowered, more knowledgeable and competent to self-manage their diabetes long term.
Meyersdale Medical Center	$250,000	Development of Healthy Education for Life Pre-Diabetes Program	Western PA (Somerset County)	Active (2008-2009)	17 participants currently enrolled.
Miners Medical Center	$250,000	Development of the Plan for Improving Health Status of Diabetic Populations	Western PA (Cambria, Indiana and Clearfield Counties)	Active (2008-2009)	23 participants currently enrolled.

Grantee	Amount	Purpose	Geographic Area	Status	Outcomes
PinnacleHealth System	$252,570	Improve ambulatory diabetes care among African Americans and Hispanics	Central PA (Dauphin County)	Closed (2006-2009)	Minimal attrition. Of the 200 original patients, 186 (83 African Americans and 103 Hispanics) completed the program, a completion rate of 93 percent. Overall, HbA1c levels improved; 20 percent of African Americans and 30 percent of Hispanics achieved HbA1c levels <7 percent. None of the participants had a value under 7 percent at baseline. ER visits decreased by 60 percent among African Americans and 18 percent among Hispanics, which positively affects the patients, community and the hospital with cost savings; and 90 percent of physician visits were kept. Both nurse educators hired full time at PinnacleHealth.
Uniontown Hospital	$158,260	Establish Uniontown Hospital Diabetes Clinic	Western PA (Fayette County)	Closed (2005-2007)	From 2007 through May 2009, 1,073 new patients were seen with an increase of 27.8 percent of established patient visits. Significant improvements made in HbA1c levels. At 4th quarter analysis, baseline HbA1c levels were 8.3 percent; at post they were 6.7 percent for a decrease of 1.6 percent. The Center is a fully functioning department of Uniontown Hospital funded through billing and reimbursement.
University of Pittsburgh-Graduate School of Public Health-Center for Minority Health	$200,000	Healthy Black Family Project	Western PA (Allegheny County)	Closed (2004-2006)	Approximately 7,162 participants enrolled. Approximately 638 health histories completed.

Trends in Diabetes Care

It is important for diabetics to keep their blood glucose in control. Controlled blood glucose results in the delay or reduction of diabetic-related complications. Diabetes prevention programs, physician offices and pharmaceutical companies are working together to develop unique and innovative ways to significantly affect diabetes care and treatment with long-term proven outcomes.

Although educational programs may be helpful, the effects are not always lasting. In order to maintain good control of blood glucose and improve quality of life for diabetics, several new trends in diabetic care have emerged, including:

- Culturally specific care: The primary goal of diabetes management is to control the level of blood glucose. Because the prevalence of diabetes is higher in minority populations, a need exists for effective interventions tailored to meet the needs and preferences of different populations. An intervention is culturally sensitive to the degree that it is meaningful and relevant to an individual's cultural identity. Culturally competent diabetes self-management education is effective in improving health outcomes for minority populations, particularly by reducing HbA1c levels, increasing compliance with standards of self-care and choosing appropriate management strategies to improve health outcomes.[18]

- Supportive care and services: The goal of supportive care and services is to reduce the complications of diabetes, reduce emergency room visits and improve HbA1c levels. Due to the complexities of diabetes, an extensive care team of specialists such as podiatrists, ophthalmologists, dentists, dietitians and endocrinologists collaborate with the primary care physician. Providing access to these services, such as medical supplies, exercise, foot exams, eye exams, dental care and nutrition education, at one visit eliminates barriers for patients completing treatment plans and self-care management plans. Bundling these services makes it convenient for the patient while reducing the number of visits required, therefore, increasing compliance.

- U.S. Diabetes Conversation Maps: The maps offer a unique approach to facilitate empowerment in diabetes group education settings. These maps approved by the American Diabetes Association, are incorporated into diabetes education programs as the diabetic standard. The benefits to the patient are that the maps create a visual and mental model for greater remembrance; patients like discovering answers for themselves, they are fun and engaging; and they allow patients to internalize and personalize health information.[19] Future research is necessary to determine the maps' effectiveness in improving long-term behavioral outcomes.

- Technology: State-of the-art Continuous Glucose Monitoring (CGM) records blood sugar levels throughout the day and night. The main advantage of CGM is that it can help identify fluctuations and trends that would otherwise go unnoticed with standard HbA1c tests, and they may enable better glucose control. Special software is available to download data from the devices to a computer for tracking and analysis of patterns and trends.[20,21]

Summary

As the incidence and prevalence of diabetes continues to increase, strategies such as culturally competent care coupled with comprehensive and supportive services and support groups have demonstrated success. The common theme throughout the programs is it appears that these strategies can be effective in reducing HbA1c levels, decreasing emergency room visits and improving health outcomes for those most at-risk for diabetes. Successful programs include collaboration and partnerships with health care providers, universities, communities and individuals themselves. As the number of newly diagnosed cases of diabetes increases, new trends in diabetes management offer promising solutions to combat a persistent problem.

The Highmark Foundation has used grantmaking to invest in organizations to improve access to programs that provide diabetes care and education to underserved populations. These programs have the potential for replication as best practices beyond their respective communities and to other populations. The ultimate goals of participation in these programs are to increase knowledge, positively change behaviors and gain a better understanding of how to manage diabetes. The Highmark Foundation has supported these organizations by ensuring that access to these programs are designed to eliminate or reduce barriers in order for diabetics to receive the care needed to assist them with diabetes management now and into the future.

Source Information:

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Information about the Highmark Foundation's grantmaking can be found at www.highmark.com

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