

# Oklahoma Diabetes State Plan



## Oklahoma's Solution for Diabetes

Reducing the Burden of Diabetes in Oklahoma

*Oklahoma Diabetes Plan—Reducing the Burden of Diabetes*



Oklahoma Diabetes Control and Prevention Program

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## ***Oklahoma Diabetes Plan—Reducing the Burden of Diabetes***

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Claremore Indian Hospital  
Chickasaw Nation  
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# *Oklahoma Diabetes Plan—Reducing the Burden of Diabetes*

## **Executive Summary**

### *Purpose*

The intent of the Oklahoma Diabetes plan is to concretely identify and outline steps for reducing the impact of diabetes in our state. This plan is a call to action, urging organizations, individuals, and communities to take a part in the statewide effort to change the health status of individuals with diabetes. The success of this plan depends upon all of us taking action.

### *Impact of Diabetes in Oklahoma*

The impact of diabetes is very serious, costly, common, but controllable. There are three main types of diabetes: Type 1 (an autoimmune form), Type 2 (the most common form, caused by the body failing to properly produce or use insulin), and gestational diabetes (develops in some pregnancies and usually disappears). Diabetes places a tremendous health burden on the citizens of Oklahoma.

- Diabetes is among the top ten leading causes of death in Oklahoma.
- Each year about 1,800 Oklahomans die of diabetes (vital statistics).
- In 1999, Oklahoma ranked 15<sup>th</sup> among all states in diabetes deaths.
- Diabetes costs the citizens of Oklahoma an estimated \$1.8 billion each year (hospital discharge surveillance system).
- The prevalence of diabetes among Oklahoma adults has increased by 43% since 1990 (BRFSS).
- Approximately 15% of Oklahoma children with diabetes have Type 2 (University of Oklahoma Children's Diabetes Center).

A growing number of Oklahomans are at an increased risk for developing Type 2 diabetes. According to BRFSS data, in 2001 one in five Oklahoma adults were obese, and approximately 35% of Oklahoma adults did not participate in any leisure time physical activity. The good news is that type 2 diabetes and its complications can be prevented or substantially reduced with proper medical care and by practicing healthy behaviors.

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Because diabetes is a risk factor for other chronic diseases especially cardiovascular disease, the total impact of diabetes on the longevity of Oklahoma citizens is even greater than what current data illustrates.

Poor management of diabetes can lead to heart disease, stroke, blindness, kidney failure, amputations, birth defects in newborns, and even death. While proper management and care of diabetes can reduce the risk of developing complications, many people in Oklahoma do not receive the recommended preventive care. For instance, over 33% of Oklahoma adults with diabetes do not get an annual dilated eye exam. Clearly, much more needs to be done to reduce the human and economic burden of diabetes in Oklahoma.

### **Development of the Oklahoma Diabetes Plan**

To create the diabetes state plan, the Oklahoma Diabetes Advisory Board (comprised of organizations and individuals throughout the state with a vested interest in improving diabetes outcomes) came together to identify key diabetes issues and needs within our state. Results from those meetings comprise the plan. The Oklahoma Diabetes Plan describes the major activities to be undertaken over five years by the Oklahoma Diabetes Advisory Board and its partners.

Four measurable outcomes will be the direct, immediate result of the implementation of this plan. These outcomes address specific issues relevant to diabetes in Oklahoma, and are responsive to the national standards set forth by the Centers for Disease Control and Prevention. Statewide data will be used to track accomplishments of these outcomes.

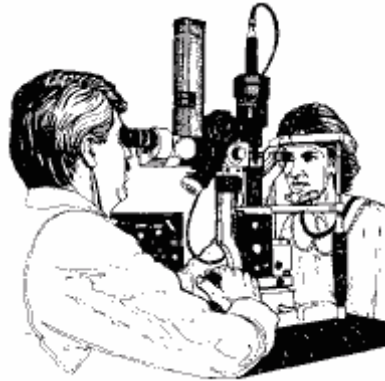
#### **Outcomes:**

1. **Prevention of diabetes:** Prevent the development of diabetes by reducing the prevalence of modifiable risk factors of obesity and sedentary lifestyle.
  - a. Promote healthy eating
  - b. Promote increased physical activity among all Oklahoma citizens
2. **Prevention of diabetes complications:** Prevent the development of diabetes complications by promoting proper diabetes care, management and follow-up.
  - a. Increase the use of ADA/IHS guidelines for standards of care

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- b. Provide more venues for health provider education
  - c. Identify diabetes earlier
  - d. Increase focus on the 5 national objectives (eye care, foot exams, HgA1c, flu and pneumonia vaccinations) as identified by CDC
3. **Community empowerment:** Assist in finding ways to support the health of all people in Oklahoma by collaborating and promoting policy changes within the community settings
- a. Community Empowerment/Health Promotion—Assist in finding ways to support the health of all people in Oklahoma by collaborating and promoting policy changes within the community settings.
  - b. Work with state and local community partners to identify and implement changes in the built environment and community policies that will facilitate healthy lifestyle behaviors
4. **Improve the collection, quality and scope of Oklahoma’s population-based diabetes data**

Achieving the goals, objectives and outcomes of the plan will take the unified effort of many applying different and creative solutions to change infrastructure, policies, and behaviors.



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# *Oklahoma Diabetes Plan—Reducing the Burden of Diabetes*

## INTRODUCTION

The purpose of the *Oklahoma Diabetes Plan* is to articulate the vision of creating a healthier future for all people in Oklahoma and especially those persons with diabetes and to provide a road map for achieving that vision.

The Oklahoma Diabetes Plan is a call to action, urging individuals, communities and organizations, to take an active role in implementing the plan.

Diabetes is a leading cause of death in Oklahoma, and type 2 diabetes is reaching epidemic proportions among all sectors of the Oklahoma population. The burden in terms of economics and human suffering is very high and growing. It is imperative that we act now.

It is only through working together toward a common vision that we will move ahead in significantly reducing the impact of diabetes in Oklahoma.

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### GENERAL DIABETES INFORMATION

#### **What is Diabetes?**

Diabetes is a disease in which the body doesn't produce or effectively use insulin. When you have diabetes, the body can't get glucose (sugar) into the cells. Glucose is the fuel that your body needs for activities such as movement of muscles. When your body cannot get the glucose that it needs inside the cells, your blood glucose stays too high and can cause the complications of diabetes. Blood glucose levels are regulated by the hormone insulin, which is produced by the pancreas. The primary purpose of insulin is to help open the cells of the body to receive glucose as a source of energy. Without insulin to "unlock" the entry into the cells, glucose builds up in the blood, and at high levels is passed out into the urine.

There are 3 main types of diabetes:

Type 1 Diabetes (formerly known as juvenile diabetes) typically occurs in people younger than 30 years of age, and accounts for approximately 10% of all cases of diabetes. With Type 1 Diabetes, the body makes little or no insulin. Type 1 Diabetes is believed to be an autoimmune response where the defense systems of the body "attack" the pancreas, which destroys its insulin-producing ability. People with Type 1 Diabetes require insulin from an outside source (i.e. needle injections or an insulin pump)

Type 2 Diabetes (formerly known as adult-onset diabetes) is more common among older adults; however, there are a growing number of younger people that are being diagnosed with Type 2 Diabetes. Type 2 Diabetes accounts for approximately 90% of all cases of diabetes. With Type 2 Diabetes, the body makes insulin, but cannot use it effectively.

Gestational Diabetes occurs in about 2-5% of all pregnancies, and is generally a temporary condition. It is believed that women that experience Gestational

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Diabetes have an increased likelihood of developing Type 2 Diabetes in the future. Gestational diabetes is more common among women who are obese, have a family history of diabetes, or are of African American, Hispanic or Native American ancestry.

Diabetes is serious, costly, common, but controllable. People that are more at risk for developing diabetes include:

- People over the age of 45
- Those with a family history of diabetes
- People that are overweight
- Women that have had a baby weighing more than 9 lbs. at birth and
- People of African American, Hispanic or Native American ancestry.

A physician using criteria developed by the American Diabetes Association (ADA) makes a diagnosis of diabetes. The following three criteria are used for the diagnosis of diabetes:

1. a fasting (no caloric food intake for at least 8 hours) blood glucose value of greater than or equal to 126 mg/dL
2. a 2-hour post-glucose load (a glucose load consists of 75 grams of glucose dissolved in water) of greater than or equal to 200 mg/dL; or
3. symptoms of diabetes and a random (non-fasting) blood glucose value of greater than or equal to 200 mg/dL.

Each of these tests must be confirmed on a separate day by a follow-up test. A separate category of diabetes has been established in place of “borderline” diabetes, which is now called impaired glucose tolerance or “pre-diabetes.” People in this category have a fasting blood glucose value between 110mg/dl and 125mg/dl, inclusive, or 2-hour post-glucose load value between 140mg/dl and 199mg/dl.

Because of the rising rates of diabetes, it is imperative to identify individuals with a higher risk as early as possible. To this end, a new category of “pre-diabetes” has emerged.

**“Pre-diabetes”** is a term which is applied when an individual’s blood glucose levels are higher than normal, but not high enough to be considered diabetes.

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People with pre-diabetes often do not show any symptoms; however, they are at an increased risk for developing Type 2 diabetes. Recent studies suggest that pre-diabetes may be reversible.

Risk factors for pre-diabetes include:

- Being overweight
- Physical inactivity
- Improper nutrition
- Having a family history of diabetes
- Having high blood pressure or high cholesterol
- Belonging to a minority group that is at risk for type 2 diabetes (African American, Native American, Hispanic) and
- Having a history of gestational diabetes or delivering an infant that weighed more than 9 lbs.

### **Signs and Symptoms**

Diabetes can be a silent disease—you can have it for years and have no symptoms. Common symptoms of diabetes include:

- Increased thirst
- Increased hunger
- Feeling tired, without energy
- Slow-healing cuts or sores
- Blurred vision
- Frequent urination and
- Dry, itchy skin.

Uncontrolled diabetes can lead to kidney failure, blindness, amputation, nerve damage and even death. Uncontrolled diabetes also increases one's likelihood of developing cardiovascular disease.

### **Complications**

Many complications of diabetes can be prevented: (national facts and figures)

- *Cardiovascular disease*—People with uncontrolled diabetes are two to four times more likely to experience a cardiovascular episode. Heart disease and stroke cause about 65% of deaths among people with diabetes. These deaths could be reduced by 30% with improved care to control blood pressure, blood glucose, and lipid levels.
- *Kidney disease*—About 38,000 people with diabetes develop kidney failure each year, and over 100,000 people are treated for this condition. Treatment to better control blood pressure and blood glucose monitoring could reduce diabetes-related kidney failure by about 50%
- *Eye disease*—Each year, 12,000 to 24,000 people become blind because of diabetic eye disease. Screening and care could prevent up to 90% of

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diabetes-related blindness. However, only 60% of people with diabetes receive annual dilated eye exams.

- *Amputations*—About 82,000 people have diabetes-related leg and foot amputations each year. Foot care programs that include regular examinations and patient education could prevent up to 85% of these amputations
- *Flu/pneumonia related deaths*—Each year, between 10,000 and 30,000 people with diabetes die of complications from flu or pneumonia. They are roughly three times more likely to die of these complications than people without diabetes. However, only 55% of people with diabetes get an annual flu shot

Following a few guidelines can help one reduce the risk for diabetes related complications.

- Monitor blood sugar levels
- Limit alcohol use
- Get daily physical activity
- Take medications as prescribed by your health professional
- Check your feet everyday
- Ask your health professional to check your feet at every visit
- Quit smoking
- Get your eyes and teeth examined at least once each year
- Follow a sensible eating plan, which includes fruits and vegetables
- Visit your primary care provider regularly

Good diabetes control involves a diabetes team approach. However, over 95% of the responsibility of diabetes control lies with the person who has it. It is crucial to work with your diabetes team to gain the knowledge, skills, and appropriate attitudes for diabetes management. The diabetes team includes, the primary care physician, the diabetes educator, and the person with diabetes. Successful diabetes management requires specific knowledge, skills and appropriate attitudes to effect lifelong behavior changes related to food intake, activity/exercise, blood glucose monitoring and medical care.

Recent diabetes research shows that more attention to diabetes prevention is necessary in order to impact overall health status.

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### **BURDEN OF DIABETES**

The state of Oklahoma can boast of many things, like our diversity and human compassion, but our rates of diabetes continue to increase, and this is not a boasting matter. The impact of diabetes is very serious, costly, common, but controllable.

- The prevalence of diabetes among Oklahoma adults has increased by 43% since 1990
- Over 40% of Oklahoma adults with diabetes do not get an annual influenza vaccine and over 55% have not received a pneumococcal vaccine
- The prevalence rate of obesity among Oklahoma adults has nearly doubled since 1990 and this correlates with the increased prevalence of diabetes
- Approximately 15% of Oklahoma children with diabetes have type 2 diabetes

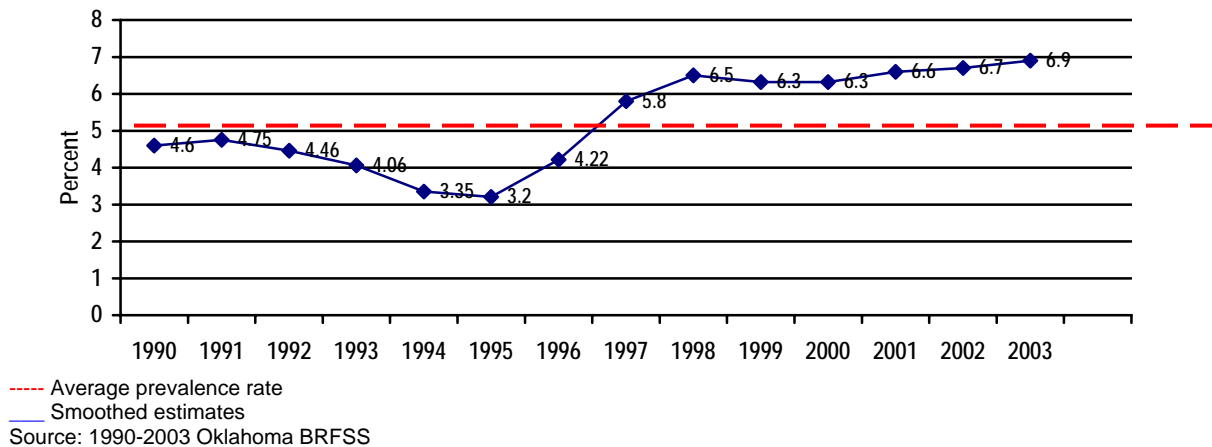
Uncontrolled diabetes can have serious consequences, including blindness, amputation, cardiovascular disease, kidney failure, and even death.

Uncontrolled diabetes causes the glucose levels to increase in the blood, which can damage the small vessels that carry blood to the eyes, which can lead to blindness. High blood glucose levels also impacts the filtering functioning of the kidneys leading to kidney failure. Nerve cells may be damaged by the increased glucose build up in the blood causing the loss of a foot or other limb. People with uncontrolled diabetes are at a greater likelihood for developing cardiovascular disease, and have a shorter life expectancy.

Diabetes places a tremendous health burden on the citizens of Oklahoma. In 2001, there were 169,000 cases of diagnosed diabetes among Oklahoma adults. Similarly, there were 91,000 Oklahoma adults with undiagnosed cases of diabetes in 2001. These figures may be underestimates of the cases of diabetes, due to the limitations of the BRFSS (for example, these numbers do not consider persons under the age of 18). The prevalence of diabetes among Oklahoma adults has increased by 43% since 1990, which results in an estimated 51,166 more people with diagnosed diabetes and 27,551 more people with undiagnosed diabetes.

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Figure 1. Oklahoma Diagnosed Diabetes Prevalence Trends, 1990-2003



Diabetes is among the top ten leading causes of death in Oklahoma. Diabetes mortality rates are increasing in Oklahoma as well as nationwide. In 1999, Oklahoma ranked 15<sup>th</sup> among all states in diabetes deaths. Additionally, each year about 1,800 Oklahomans die of diabetes (vital statistics). Diabetes-related deaths are impacting Oklahoma minority groups at a disproportionate rate. For example, the age-adjusted death rates are over 200% higher for Native Americans and over 130% higher for blacks compared to whites. Because diabetes is a risk factor for other chronic diseases especially cardiovascular disease, the total impact of diabetes on the longevity of Oklahoma citizens is even greater than what current data illustrates.

In the United States, diabetes represents \$491.8 billion in direct medical costs and \$39.8 billion in indirect medical costs (Oklahoma Diabetes Surveillance Report). The per capita annual costs are \$10,882. Applying this figure to the estimated number of persons with diagnosed diabetes in Oklahoma, the cost attributable to diabetes in Oklahoma can be estimated as \$1.8 billion. The economic burden of diabetes in Oklahoma is extensive.

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### **DIABETES IN SPECIAL POPULATIONS**

#### **Diabetes during pregnancy**

Women with diabetes prior to pregnancy (type 1 or type 2) and women with diabetes induced by or recognized during pregnancy (gestational) make up the population of women who have diabetes during pregnancy. Gestational diabetes occurs in 2.5-4% of pregnant women in the United States, and women that experience gestational diabetes have a 25-45% increase in risk of developing the condition in subsequent pregnancies (Oklahoma Diabetes Surveillance Report). Risk factors for gestational diabetes include: older maternal age, family history of diabetes, high pre-pregnancy BMI, hypertension, and previous adverse pregnancies (Oklahoma Diabetes Surveillance Report). There are several risks associated with diabetes during pregnancy—preeclampsia, delivery complications, and macrosomia (Oklahoma Diabetes Surveillance Report). In addition to the problems posed to the women with diabetes during pregnancy, the infant also has increased risks of morbidity as a newborn, child and even as an adult (Oklahoma Diabetes Surveillance Report).

#### **Diabetes and Children**

Older literature reports that type 1 diabetes accounts for 95% of diabetes in children, which according to the ADA accounts for about 1 in 400 children. However, recent statistics show that the increasing prevalence of obesity among children is presenting an emerging problem of type 2 diabetes among children (Oklahoma Diabetes Surveillance Report). However, type 2 diabetes in minority youth has been on the rise for the last 20 years (Oklahoma Diabetes Surveillance Report). Using the ADA estimates for the number of children with type 1 diabetes, there are approximately 2,231 Oklahoma children (under 18) with type 1 diabetes. The number of children with type 2 diabetes can be calculated based on the assumption that approximately 15% of diabetes among children is type 2, and based on this assumption, there are approximately 394 Oklahoma children with type 2 diabetes. Due to the recent increase in type 2 diabetes among children, and the lack of a statewide system for reporting diabetes in children,

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these numbers are likely to be underestimated (Oklahoma Diabetes Surveillance Report).

### **Diabetes Among Native Americans**

The prevalence rate of diabetes is higher among Native Americans than in the general U.S. population (Oklahoma Diabetes Surveillance report). According to the 2000 Census, 10.9% of Oklahomans classify themselves as Native Americans, and given that minority populations are disproportionately impacted by diabetes the rates for diabetes among this group are astounding. Age adjusted death rates are over 200% higher for Native Americans when compared to whites. The diabetes data for this population is limited in Oklahoma (Oklahoma Diabetes Surveillance Report). Using innovative techniques, such as a modified BRFSS, the Diabetes Prevention and Control program and its partners have been able to gain a sense of the extent of the burden of diabetes among Native Americans.

Although the consequences of diabetes are dire, by controlling diabetes, Oklahomans can maintain a healthier lifestyle of quality. To aid states in controlling and preventing diabetes, federal government agencies are vested in improving state capacity for addressing diabetes.



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### **DIABETES PREVENTION AND CONTROL PROGRAM HIGHLIGHTS**

The Oklahoma Diabetes Prevention and Control Program (DPCP) began in 1984 with an emphasis on bridging a gap in services. The focus of the program was to provide group diabetes self-management training in rural communities and to promote an awareness of diabetes and diabetes management. In 1994, the program focus changed due to funding through a cooperative agreement with the Centers for Disease Control and Prevention (CDC). The Oklahoma DPCP has a mission of reducing diabetes morbidity and mortality, and uses three methodologies to impact statewide change in diabetes. The methodologies utilized by the DPCP include: working with health systems, employing health communication techniques, and pursuing community interventions. Using these approaches for diabetes control and prevention, the DPCP has focused on the following:

- Encouraging compliance with the five national objectives as identified by CDC for proper diabetes control: HgA1c, foot care, eye care, flu/pneumonia vaccinations
- Conducting surveillance and evaluation on the burden of diabetes in Oklahoma
- Community interventions to empower communities with tools to address diabetes on a local level
- Partnering and coordinating efforts to develop a diabetes “community of practice” and
- Health communications to raise awareness about diabetes.

The DPCP has experienced great success in establishing partnerships to work toward improving the state of diabetes in Oklahoma. Such success includes the following:

- Diabetes conference: In 2002, the DPCP partnered with ediba Diabetes Center of Excellence and Diabetes Solutions and various other stakeholders to plan, organize and implement the first statewide diabetes conference for health professionals. The mission of the conference was to provide a greater level of collaboration and coordination among health professionals working in diabetes areas. This conference has been successful from the onset, and continues to grow each year. The conference provided continuing education for participants, networking opportunities, updates on latest diabetes research and findings, and

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promotes compliance with the latest diabetes guidelines. This conference is an on-going effort.

- Website: <http://www.dsok.net> is a website designed to serve as the diabetes resource directory for the state of Oklahoma. The website provides county-specific information on diabetes services, and is frequently used by Oklahoma health care providers. Links to both national and local diabetes organizations are provided, as well as information on current events and research. Through the site, we are able to host chats and maintain a bulletin board that is updated regularly.
- DPCP brochure: The DPCP developed a brochure highlighting the program and reasons that diabetes matters for Oklahoma. The brochure is used as a marketing “tool” for the program to illustrate how the DPCP can serve to partner with organizations and agencies across the state. The creation of the brochure has allowed the DPCP to create a tangible product to highlight the program and areas of focus.
- Diabetes Collaborative: The DPCP has been involved with community health centers throughout the state that are participating in the Bureau of Primary Health Care’s Diabetes Collaborative. The Diabetes Collaborative focus is on rapid system changes to improving diabetes care in the clinic setting, and is based on the Chronic Care Model. These rapid system changes foster a strong relationship between the DPCP and the community health centers through the provision of education materials and technical assistance. Diabetes collaboratives throughout the state partner with the DPCP in its mission of reducing diabetes morbidity and mortality.
- Oklahoma Foundation for Medical Quality (Diabetes Collaborative): The concept of the Bureau of Primary Health Care’s diabetes collaboratives has extended to a more locally driven project sponsored by the Oklahoma Foundation for Medical Quality (OFMQ). OFMQ has tailored the concept of the collaborative for local physician practice groups, and has relied upon the support of the DPCP to help support, promote, and provide technical assistance to their initiative. With over 20 practice groups around the state participating, Oklahoma clinicians are exploring systemic changes in the delivery of diabetes care.
- CNEP program/ediba: The DPCP is exploring the opportunity to partner with the Oklahoma State University Cooperative Extension’s Community Nutrition Education program and ediba Diabetes Center of Excellence to educate and train paraprofessionals about diabetes control and prevention. The Community Nutrition Education Program (CNEP) enrolls limited-resource families in a personalized, thorough, long-term educational experience. The goal is for every enrolled family to consume a

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diet that promotes good health and to acquire an adequate amount of nutrient-dense foods every day through effective use of available resources. CNEP employs paraprofessionals that perform home visits to eligible clients to discuss nutrition. By empowering and providing additional resources, these paraprofessionals will be able to create a link between nutrition and proper diabetes control for their clients that have diabetes. This tentative partnership is an innovative approach to expanding DPCP service and works to raise awareness to a high-risk population.

- Health Professional linkages: The DPCP has an ongoing relationship with several of the diabetes health professional organizations throughout the state: the American Diabetes Association (ADA), Northeastern Oklahoma Diabetes Educator Group (NODE), and Western Oklahoma Diabetes Educator Group (WODE). Working in conjunction with these organizations, the DPCP is able to inform a broader network of health professionals about statewide diabetes activities and actions. These relationships have also been an avenue of networking and brainstorming for the DPCP, and have provided a method for dissemination of patient-based education materials.
- OU Children's Diabetes Center: The DPCP has partnered with the OU Children's Diabetes Center staff for research and innovative approaches. OU Children's Diabetes Center has a staff dedicated to addressing diabetes issues with children, and pays particular attention to continuity of care. The OU Children's Diabetes Center is the only medical group in Oklahoma actively researching the prevention and early detection of type 2 diabetes in children and adolescents. This research provides access to cutting-edge therapies that may not be widely available for years. The partnership between the DPCP and OU Children's Diabetes Center includes promotion of their current research and sharing resources to improve the burden of diabetes for Oklahomans.
- REACH 2010: The DPCP works closely with the REACH 2010 project, which strives to reduce the burden of diabetes and cardiovascular disease through physical activity. This project focuses to reduce health disparities among minority populations, and works with 8 Native American tribes and one urban center throughout the state. The partnership between the DPCP and the REACH 2010 project includes the provision of diabetes materials and technical assistance as needed. The REACH 2010 tribal partners are involved in planning, implementing and evaluating physical activity programs for their populations. Tribes have made policy changes in worksites and communities, combined funding to perform innovative programming options, and some have built health/fitness facilities to increase options for physical activity among the target population.

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- IHS Health Disparities tribal grants: The Indian Health Service has received funding from Congress to develop, document, and sustain a public health effort to prevent and control diabetes in American Indian and Alaska Native peoples. Many of the federally recognized tribes in Oklahoma have received this funding, and are gaining national recognition for their innovation and quality of care. The DPCP has been a resource to these programs for materials and community linkages.

The partnerships and linkages established and maintained by the DPCP work collectively to address diabetes, as well as reduce the burden of diabetes in Oklahoma.

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### **THE OKLAHOMA DIABETES PLAN**

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.” Margaret Mead

Because of the enormity involved with reducing the burden of diabetes in Oklahoma, the Oklahoma Diabetes Advisory Board employs a multi-year approach. The Oklahoma State Diabetes Plan describes the major activities to be undertaken over five years by the Oklahoma Diabetes Advisory Board and its partners. The following sections describe the purpose and anticipated outcomes of the plan. Each year the Oklahoma Diabetes Advisory Board will review the state plan and provide an executive summary of activities and objectives, which over time will lead to the accomplishment of the overall goal.

The Oklahoma Diabetes Advisory Board presents this strategic plan for all Oklahomans to use as a framework to improve the quality of care for persons and families with diabetes and to reduce the disparities in health status among persons with diabetes. The strategic plan provides a framework for reducing the burden of diabetes in Oklahoma.

#### **Purpose**

The overall purpose of the Oklahoma State Diabetes plan is to concretely identify where we are as a state with regard to diabetes, where we want to go as a state with respect to diabetes, and to outline steps for how we are going to get there. This plan will define the direction of diabetes in Oklahoma, and create a concrete pathway for handling the problem of diabetes within our state. The Oklahoma State Diabetes plan will incorporate some of the objectives of Healthy People 2010, as measures for action and achievement, with each objective and activity aimed at achieving the goal.

#### **Goal**

The overall goal of both the diabetes prevention and control program and this state plan is to improve quality of life and reduce diabetes morbidity and

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mortality. To this end, the Oklahoma State Diabetes plan embraces objectives that will create action with these outcomes in mind.

Three measurable outcomes will be the direct, immediate result of the implementation of this plan. These outcomes address specific issues relevant to diabetes in Oklahoma, and are responsive to the national standards set forth by the Centers for Disease Control and Prevention. Statewide data will be used to track accomplishments of these outcomes.

Outcomes:

1. Prevention of diabetes
2. Prevention of diabetes complications and
3. Community empowerment.

The Oklahoma Diabetes Advisory Board has utilized a logic model as a framework to guide its developmental and decision-making processes. The logic model graphically depicts the relationships and actions that are expected to precede long-term changes in diabetes morbidity and mortality rates. The model addresses the system changes needed, environmental, policy, individual level behavioral and community.

**LOGIC MODEL:**

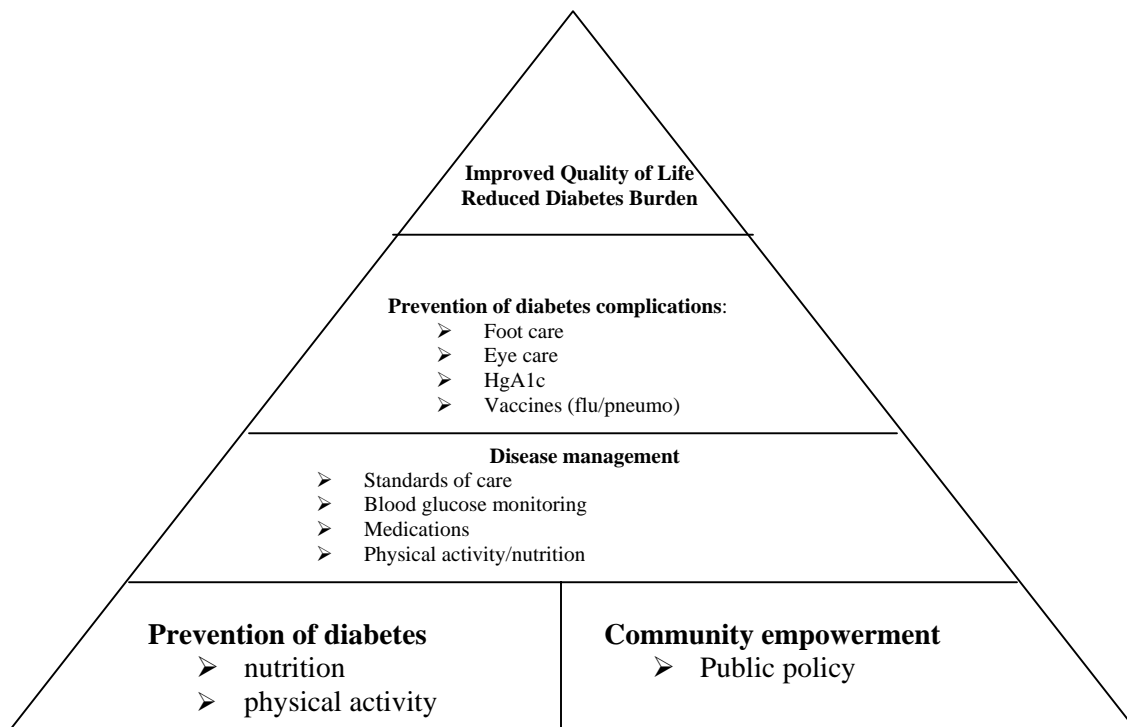
<b>Inputs</b>	<b>Activities</b>	<b>Short-term objectives</b>	<b>Long-term objectives</b>	<b>Goal</b>
Diabetes Prevention and Control Program	Promotion of 5 A Day Program  Promotion of Best Practices with Physical Activity  Development of diabetes educational resources and campaigns  Establish a speaker's bureau	Increased compliance with diabetes guidelines  Raised awareness  Activated and engaged communities  Informed health care professionals	Prevention of diabetes	Reduced diabetes burden



## ***Oklahoma Diabetes Plan—Reducing the Burden of Diabetes***

- Responsible Sexual Behavior
- Mental Health
- Injury and Violence
- Environmental Quality
- Immunization
- Access to Health Care

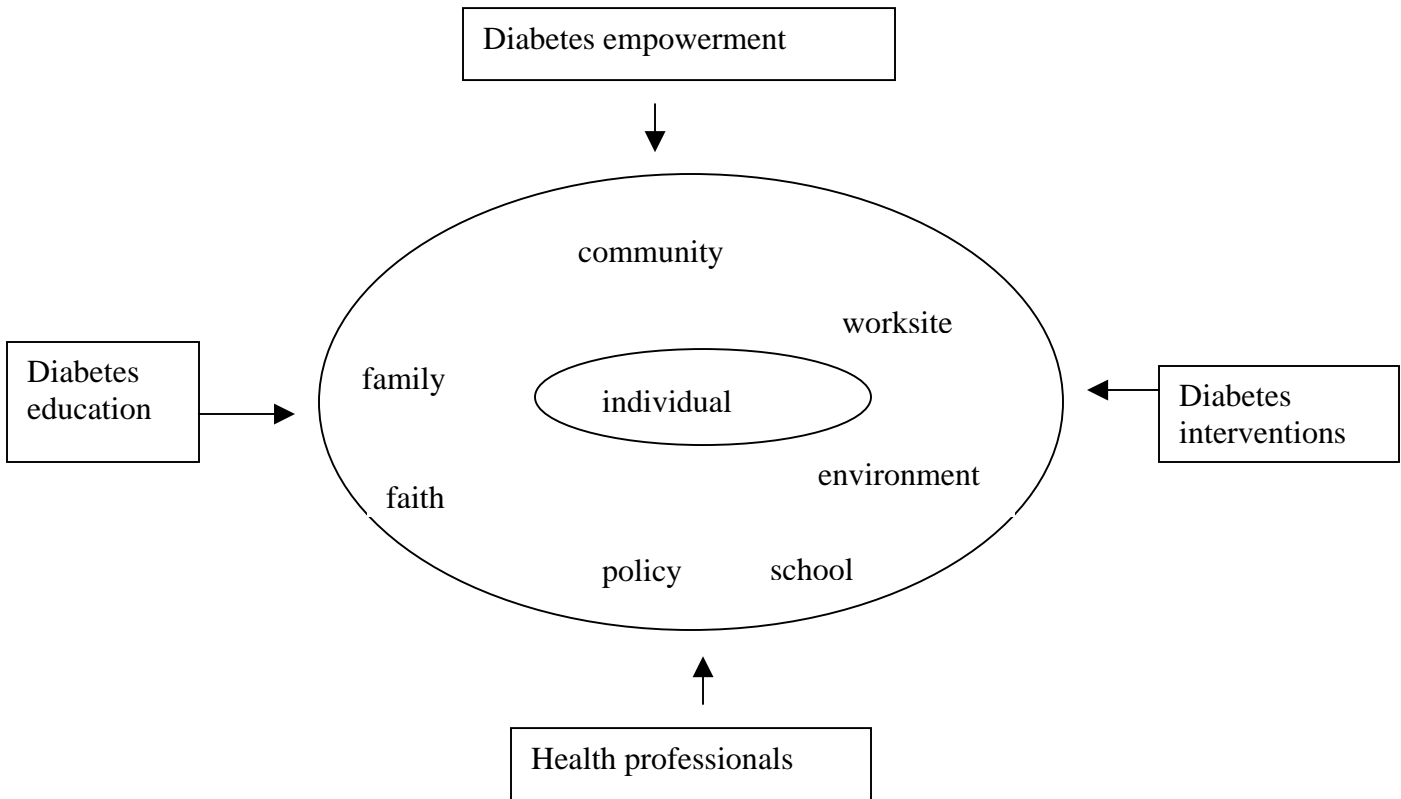
The pyramid below provides a framework of focus and the energy expended on each focus area. For example, by focusing on the prevention of diabetes, we will in turn be focusing on the leading health indicators of physical activity and overweight/obesity via a focus on nutrition. Each area of focus will work toward improving quality of life and reducing the burden of diabetes in Oklahoma.



Because the work of diabetes awareness and education does not take place in a vacuum, much detail and attention will be paid to addressing areas in which people may be repeatedly impacted. Given the scope and detail of the action steps outlined to make marked and improved changes, the overall plan will be a multi-year process.

## Oklahoma Diabetes Plan—Reducing the Burden of Diabetes

### Influences for Diabetes Action



The following plan emphasizes target areas to be undertaken over an extended period of time, and provides a concrete pathway for accomplishing our overall goal of reducing the burden of diabetes and improving the quality of life for Oklahomans.

## *Oklahoma Diabetes Plan—Reducing the Burden of Diabetes*

### **Objectives and Action Steps:**

**Objective 1:** Diabetes Prevention—Prevent the development of diabetes by reducing the prevalence of the risk factors of obesity and sedentary lifestyle.

The primary prevention of diabetes is emerging as an important national and state health policy objective. The type 2 diabetes risk factors that can be controlled, obesity and sedentary lifestyle, are the principal focus of efforts to prevent the disease. In an effort to reduce the number of people in Oklahoma that are at an increased risk for developing diabetes, the following objectives and action steps will be monitored and evaluated:

#### 1. Promote healthy eating

- By 2010 increase the proportion of persons aged 2 years and older who consume at least 5 servings of fruits and vegetables each day.
- **Baseline:** 49 percent of persons aged 2 years and older consumed at least three daily servings of vegetables, in 1994–96 (age adjusted to the year 2000 standard population).

### **Action Steps:**

- Promote 5 A Day program and materials in WIC classes
  - Collaborate with the Oklahoma State University Cooperative Extension nutrition programs to promote the 5 A Day program and materials
  - Work with Department of Human Services to develop an educational campaign regarding proper nutrition for TANF recipients
  - Establish a speaker's forum for groups/organizations interested in lifestyle choices and activities
  - Work with statewide partners to develop a campaign to improve food selection choices in schools
  - Incorporate diabetes information into WIC classes to increase awareness of diabetes risk factors impacted by nutrition choices
  - Continue to promote the Schools for Healthy Lifestyles curriculum taught throughout the state
  - Work with state agencies to increase consumption of 5 A Day as a method for improving health outcomes
- #### 2. Promote increased physical activity among all Oklahoma citizens
- By 2010 increase the proportion of adults who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day.
  - **Baseline:** According to data from the National Health Interview Survey (NHIS), CDC, and NCHS, 15% of adults aged 18 and older engaged in moderate physical activity for at least 30 minutes 5 or more days per week in 1997.
  - By 2010 increase the proportion of adolescents who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days.

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- **Baseline:** According to data from the Youth Risk Behavior Surveillance System (YRBSS), CDC, and NCCDPHP, 27% of students in grades 9 through 12 engaged in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days in 1999.

### **Action Steps:**

- Continue to promote the Schools for Healthy Lifestyles curriculum taught throughout the state
- Work with community organizations, specifically Turning Point, to develop TRAILS program in several communities throughout the state
- Work with State Department of Education to promote a minimum of 30 minutes of physical activity for every child/student
- Work with Head Start programs throughout the state to promote physical activity within their centers
- Work with Department of Human Services to develop educational tools regarding increased physical activity to TANF recipients
- Establish a speakers' forum for groups/organizations interested in improved lifestyle activities
- Work with the REACH 2010 project, which works to reduce the burden of diabetes and cardiovascular disease through physical activity
- Work with tribal diabetes programs throughout the state

**Principal Agency:** DPCP

**Partners:** OSDH – Chronic Disease Service and Energy Force  
State Dept. of Education  
OSDH -Turning Point  
Department of Human Services  
Community Action Agency—Head Start programs  
Schools for Healthy Lifestyles

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**Objective 2:** Prevention of Diabetes Complications—Prevent the development of diabetes complications by promoting proper diabetes care, management and follow-up.

Given proper follow-up care, serious diabetes complications can be prevented or their onset delayed. For the person with diabetes, this means being proactive in their health care, and the adherence of guidelines among health care professionals. Early detection of diabetes will be an effective strategy only to the extent that there is proper follow-up when diabetes is diagnosed. In an effort to prevent the complications associated with diabetes (i.e. nephropathy, retinopathy, amputations, cardiovascular disease), the following objectives and action steps will be monitored and evaluated:

1. Increase the use of ADA/IHS guidelines for standards of care
  - By 2010 increase the proportion of persons with diabetes who receive formal diabetes education.
  - **Baseline:** According to National Health Interview Survey (NHIS), CDC, NCHS, 45% of persons with diabetes received formal diabetes education in 1998.

### **Action Steps:**

- Encourage participation in the Oklahoma Foundation for Medical Quality (OFMQ) and Bureau of Primary Health Care diabetes collaborative
- Work with OFMQ and Oklahoma Primary Care Association to develop a statewide media campaign regarding standards of care
- Work with IHS to encourage diabetes program grantees to apply for IHS recognition
- Work with all SDPA grantees participation in the annual IHS audit
- Work with statewide partners to develop a “grow a CDE” program encouraging health professionals to become certified diabetes educators
- Increase the number of ADA recognized programs and providers
- Work with university nursing programs to increase diabetes awareness and professional expertise

**Principal Agencies:** OFMQ and ADA

**Partners:**  
OPCA  
IHS  
DPCP  
WODE  
NODE

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### 2. Provide more venues for health provider education

#### **Action Steps:**

- Continue sponsoring “Oklahoma’s Solutions for Diabetes” conference on annual basis
- Collaborate with other health organizations to provide diabetes health forums
- Work with WODE and NODE to increase participation in diabetes educator activities
- Collaborate with the University of Oklahoma Health Sciences Center to present diabetes information during Grand Rounds
- Work with University of Oklahoma College of Medicine to incorporate diabetes education into curriculum
- Work with OSMA and/or OU Health Science Center to promote bi-yearly diabetes education for new physicians
- Work with OK Physician Research Network’s Physician Enhancement Assistants (PEA’s)

**Principal Agency:** DPCP

**Partners:** Diabetes Solutions  
Ediba Diabetes Center of Excellence  
OFMQ  
OU Children’s Diabetes Center  
IHS

### 3. Identification of diabetes earlier

- By 2010 increase the proportion of adults with diabetes whose condition has been diagnosed.
- **Baseline:** According to recent findings by the ADA and other national organizations, 17 million people in the United States have diabetes; however, results from the National Health Interview Survey (NHIS), CDC, NCHS, indicate that only 68% of adults aged 20 years and older with diabetes had been diagnosed.

#### **Action Steps:**

- Encourage use of ADA pencil/paper test to determine risk for diabetes
- Work with OSMA to encourage statewide physician education on insulin resistance, metabolic syndrome, and pre-diabetes
- Work with collaborative participants to screen for Impaired Glucose Tolerance
- Work with health professional organizations (i.e. OSMA, OOA, physician assistants, nurse practitioners, etc.) to encourage identification of diabetes risk factors

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- Examine with Choctaw Nation the possibilities of making the Diabetes Detection Initiative (DDI) sponsored by the Dept. of Health and Human Services statewide

Principal Agency: OFMQ

Partners: ADA  
OSMA  
OPCA  
IHS

4. Increase focus on the 5 national objectives (eye care, foot exams, HgA1c, flu and pneumonia vaccinations) as identified by CDC
  - Increase the proportion of people with diabetes who have a glycosylated hemoglobin measurement at least once a year.
  - **Baseline:** According to the BRFSS, 24% of adults aged 18 years and older with diabetes had a HgA1c measurement at least once a year.
  - Increase the proportion of people with diabetes who have an annual dilated eye exam.
  - **Baseline:** According to National Health Interview Survey (NHIS), CDC, NCHS, 47% of adults aged 18 years and older with diabetes had an annual dilated eye exam in 1998.
  - Increase the proportion of people with diabetes who have at least an annual foot exam.
  - **Baseline:** According to BRFSS, 55% of adults aged 18 years and older with diabetes had at least an annual foot examination.
  - Increase the proportion of people with diabetes who are vaccinated annually against influenza and pneumococcal disease.
  - **Baseline:** According to BRFSS, 59% of adults aged 18 years and older with diabetes have received the influenza immunization annually. For pneumococcal vaccine, the level is 44%.

### **Action Steps:**

- Provide NDEP materials related to the 5 national objectives to primary care physicians throughout the state
- Develop awareness campaign targeting high-risk individuals regarding diabetes care guidelines
- Work with OFMQ and OPCA to develop a statewide media campaign regarding standards of care

Principal Agency: DPCP

Partners: OFMQ ADA  
OPCA Certified Diabetes Educators  
OU Children's Diabetes  
IHS  
Ediba Diabetes Center of Excellence

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**Objective 3: Community Empowerment/Health Promotion—Assist in finding ways to support the health of all people in Oklahoma by collaborating and promoting policy changes within the community settings.**

1. Support community-based programs to prevent and manage diabetes in Oklahoma utilizing effective strategies

### **Action Steps:**

- Work with the ADA and JDRF to promote diabetes advocacy in the legislature
  - Cultivate relationships between various Oklahoma communities impacted by diabetes
  - Work with Turning Point Council to create community interventions focusing on diabetes
  - Develop and implement programs for coordinated community partnerships to increase opportunities for healthy lifestyle behaviors, including faith-based organizations, government, businesses, schools and elder care services
  - Evaluate, document and share the outcomes of coordinated community partnerships, and develop models that are replicable by others.
  - Work with the Oklahoma Primary Care Association to promote the development of community health centers
  - Work with the Oklahoma Primary Care Association to promote the HRSA Diabetes Collaborative
  - Provide CDC's Diabetes Today and NDEP Community Tool-kit training to interested communities
  - Work with REACH 2010 project
  - Work with tribal wellness programs
2. Work with state and local community partners to identify and implement changes in the built environment and community policies that will facilitate healthy lifestyle behaviors

### **Action Steps:**

- Work with OSDH Turning Point Council to identify communities interested in community interventions related to diabetes
- Identify and collaborate with non-traditional partners to create diabetes awareness and policy development
- Establish community coalitions to examine their community environments and policies to identify ways of increasing opportunities for physical activity and healthy eating
- Raise awareness among the public and policymakers about how the built environment and community policies impact health and what they can do about it
- Work with council leaders and others to change existing policies and zoning codes to encourage land development patterns that make daily

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- living activities (i.e. shopping, schools, work, etc.) within walking distance of where people live
- Provide opportunities for people to get involved in making decisions that improve access to physical activity and healthy foods in their neighborhoods and communities
  - Promote bicycling, walking and other forms of physical activity as viable means of transportation
  - Encourage employers to support employee health by offering programs and benefits that facilitate daily physical activity

**Principle Agency:** DPCP  
**Partners:** OSDH Turning Point Council  
Oklahoma Primary Care Association  
Tribal Wellness Centers  
ADA Strong Body and Spirit program

**Objective 4:** Improve the collection, quality and scope of Oklahoma’s population-based diabetes data

### **Action Steps:**

- Collect, analyze and report on diverse and at-risk populations in Oklahoma
- Effectively communicate diabetes data issues to policy makers and people in Oklahoma
- Develop a statement of need for diabetes-related data in Oklahoma
- Actively communicate diabetes data to Oklahoma citizens



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### **FOCUS**

The preceding plan outlines steps and areas of focus to improve the quality of life of Oklahomans with diabetes and reduce the burden of diabetes in Oklahoma.

The duration of the plan will be 5 years; however, following is an outline of action items that will be undertaken in year 1 to begin working toward our goal of improved quality of life and reduced burden of diabetes in Oklahoma.

- Year 1:        Focus—
- Improving standards of care
  - Increase compliance with 5 national objectives
  - Host community education forums
  - Begin partnering with non-traditional partners to address diabetes prevention (i.e. increase physical activity, improved nutrition)

The Oklahoma Diabetes Advisory Board will annually review the state plan and progress toward the accomplishment of stated objectives and goals. The plan will maintain this structure, however, will continue to evolve to provide a more comprehensive and statewide approach toward addressing and impacting diabetes in Oklahoma



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Centers for Disease Control and Prevention. (2003). *Promising Practices in Chronic Disease Prevention and Control: A Public Health Framework for Action*. Atlanta, GA: CDC. This book is a compilation of effective population-based chronic disease and risk reduction interventions. [http://www.cdc.gov/nccdphp/promising\\_practices/pdfs/Promising\\_Practices.pdf](http://www.cdc.gov/nccdphp/promising_practices/pdfs/Promising_Practices.pdf)

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Oklahoma Department of Health. (2003). *Oklahoma Surveillance Report 2003: The Burden on Diabetes in the Sooner State*.

Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care*. 2002, Vol. 25, S5-S20.

## ***Oklahoma Diabetes Plan—Reducing the Burden of Diabetes***

### Acronyms:

ADA-American Diabetes Association

CDC-Centers for Disease Control and Prevention

DPCP-Diabetes Prevention and Control Program

IHS-Indian Health Service

NDEP-National Diabetes Education Program

NODE-Northeastern Oklahoma Diabetes Educators

OFMQ-Oklahoma Foundation for Medical Quality

OPCA-Oklahoma Primary Care Association

OSMA-Oklahoma State Medical Association

WODE-Western Oklahoma Diabetes Educators

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### Oklahoma Research:

- Jiande Chen, MD—(2004-2005)  
Title: “Synchronized gastric electrical stimulation for the treatment of diabetic gastroparesis” (both Type 1 and Type 2)  
Veteran’s Research and Education Foundation grant of \$100,000
  
- Alicia Jenkins, MD—(2003-2005)  
Title: “Markers of Diabetic Retinopathy”  
University of Oklahoma Health Sciences Center research grant of \$160,000
  
- Sanjay I. Bidkhandani, MBBS, PhD—(2002-2005)  
Title: Role of frataxin gene mutations in the pathogenesis of diabetes mellitus  
University of Oklahoma Health Sciences Center research grant of \$300,000
  
- Madeleine W. Cunningham, PhD—(2002-2005)  
Title: “Autoimmunity in diabetic cardiomyopathy”  
University of Oklahoma Health Sciences Center research grant of \$300,000
  
- Timothy Lyons, MD, FRCP—(2001-2003)  
Title: “Modified LDL Effects on Signalling in Retinal Capillary Cells”  
University of Oklahoma Health Sciences Center research grant of \$300,000
  
- Kenneth Copeland, MD—(2003-ongoing)  
Title: “TODAY (Treatment Options for type 2 Diabetes in Adolescents and Youth) study” -Seeks to identify the best treatment of type 2 diabetes in children and teens  
NIDDK/NIH grant (co-support by ADA)
  
- Raymond MacDonald, PhD—(2001-2003)  
Mentor/Michael Hale, PhD, Fellow  
Research grant of \$70,000
  
- Melanie H. Cobb, PhD—(2001-2003)  
Mentor/Michael C. Lawrence, PhD, Fellow  
Research grant of \$70,000
  
- Ann Louise Olson, PhD—(1998-2002)  
Title: “Role of Rab4 in Insulin Receptor Trafficking”  
University of Oklahoma Health Sciences Center research grant of \$220,179
  
- Ann Louise Olson, PhD—(1997-2001)  
Title: “Functional Analysis of the GLUT4 Gene Promoter in Transgenic Mice”

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University of Oklahoma Health Sciences Center research grant of \$299,757

- LeeAnn Olansky, MD—(1997-2000)  
Title: “Genetics of Susceptibility to Diabetic Neuropathy”  
University of Oklahoma Health Sciences Center research grant of \$150,000
- Piers Blackett, MD and David Jelley, MD—(1994-1999)  
Title: “Diabetes Prevention Trial-Type 1”  
University of Oklahoma Health Science Center and Warren Diabetes Center
- Eric Howard, PhD—(1994-1996)  
Title: “Metalloproteinase-Mediated Turnover of Extracellular Matrix Components”  
University of Oklahoma Health Sciences Center research grant of \$98,683
- Joseph P. McCann, MSc, PhD—(1990-1993)  
Title: “Sex Steroids and Islet Hormone Function in Obesity”  
Oklahoma State University research grant of \$195,000

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### Glossary

**A1c (hemoglobin A1c or HbA1c)**—a clinical test used to gauge the level of blood glucose control. It provides an average of the blood glucose levels for the past 120 days. Regular A1c testing is essential to monitoring the effectiveness of diabetes treatment plans.

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

**Chronic Disease/Condition**—an illness that is long term or permanent. Diabetes is a progressive chronic disease that requires ongoing treatment and monitoring, and as yet has no cure.

**Community**—functional spatial units meeting basic needs for sustenance, units of patterned social interaction, and/or symbolic units of collective identity.

**Complications**—conditions that can result from poorly controlled diabetes.

**Cultural competency**—a set of behaviors and attitudes integrated into health care practices and policies that enable providers to work effectively in cross cultural situations.

**Diabetes**—a group of complex chronic diseases characterized by the inability to produce or properly use insulin.

**Empowerment**—the process by which communities and individuals are enabled to act effectively in transforming their lives and their environments; the ability to influence the conditions of life that results from increased awareness, social support, and problem-solving skills.

**Gestational diabetes**—occurs in about 2-5% of all pregnancies, and is generally a temporary condition. It is believed that women that experience gestational diabetes have an increased likelihood of developing Type 2 diabetes in the future.

**Goal**—a general course of action to be undertaken.

**Health promotion**—the process of enabling people to change their lifestyle toward a state of optimal health (i.e. balanced physical, emotional, social, spiritual, and intellectual health).

**Insulin**—an essential hormone that converts sugar, starches, and other carbohydrates into energy needed for daily life. Without insulin, sugars build up in the blood, causing serious, life threatening complications and eventually death.

**Partners**—organizations and/or individuals sharing a common goal and working together to achieve it.

**Patient empowerment**—the process of assisting people in being actively involved in their diabetes care.

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**Pre-diabetes**—a condition where blood glucose levels are higher than normal but are not yet high enough to be diagnosed as having type 2 diabetes. Pre-diabetes is defined as impaired glucose tolerance (IGT) or impaired fasting glucose (IFG).

**Preventive Care/Prevention**—health care that stresses behavior, regular testing and screening, and other services to prevent disease (i.e. diabetes) and its complications. Preventive care for diabetes includes exercise and diet, regular testing and early detection of complications, smoking cessation, frequent self-monitoring of blood glucose, and regular visits for disease management. Prevention of type 2 diabetes includes screening for pre-diabetes, regular exercise and weight management.

**Risk behaviors**—an individual’s lifestyle choices (such as poor nutrition, physical inactivity, etc.) that increase their risk of disease development or complications.

**Risk factors**—characteristics of individuals that increase the likelihood that they will experience disease or death compared to the rest of the population.

**Self-care/Self-Management**—activities undertaken by an individual to control and monitor their diabetes outside of the clinical setting. More than 90% of diabetes care is self-care.

**Self-management education**—instruction about nutrition, exercise, medications, blood glucose monitoring, and emotional adjustment to help people control their diabetes and make healthy lifestyle choices.

**Social Marketing**—a strategy that uses traditional business marketing techniques to improve health or advance a social good. The goal of social marketing is to get selected audiences to understand, accept and value new ideas, and to ultimately change their attitudes and take positive actions.

**Stakeholders**—people or organizations with a “stake” or investment in the outcome of a program, intervention or service.

**Type 1 Diabetes**—a form of diabetes; it develops when the body’s immune system destroys the cells that make insulin. People with type 1 diabetes require daily insulin treatment to survive.

**Type 2 Diabetes**—results from the body failing to properly produce or effectively use insulin.