Kansas Diabetes Plan
2008-2013

Published July 2008

Kathleen Sebelius, Governor

Roderick L. Bremby, Secretary
Kansas Department of Health and Environment

Richard Morrissey, Interim Director
Kansas Department of Health and Environment
Division of Health

This publication was supported by Cooperative Agreement Number U32/CCU022718-05 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

July 2008

Dear Fellow Kansans,

Diabetes has touched nearly all of our lives. You may have a neighbor, friend, or co-worker who has struggled with this devastating disease. Perhaps diabetes has hit much closer to home with a relative, spouse or child affected by diabetes. You yourself may be living with diabetes.

Diabetes is one of the leading causes of death and disability in Kansas and continues to increase at an alarming rate. The increase in diabetes has paralleled the increase of the number of adult Kansans who are overweight or obese. These parallel trends reflect a strong correlation between being overweight or obese and the development of diabetes.

These alarming results have not been limited to adults. Type 2 diabetes, which prior to 1980 was usually seen in adults, is becoming increasingly common in children and adolescents. According to the Centers for Disease Control and Prevention, if current trends in obesity and type 2 diabetes continue, children born in the year 2000 will face a 1 in 3 chance of developing diabetes at some time in their life. In Latino children, the risk is predicted to be even higher – 1 in 2.

The good news is that our understanding of diabetes and how to prevent and treat it is constantly improving. We now know what actions can be taken to delay and even prevent the onset of diabetes and minimize its damaging health effects. Adopting a healthy lifestyle, choosing healthier eating habits and increasing physical activity can reduce you and your children's chances of developing diabetes.

By working together, we can decrease the burden of diabetes in our state. I encourage all Kansans to take an active role in implementing the Kansas Diabetes Plan. Please join us in spreading the message that diabetes prevention and control is a priority in Kansas.

Sincerely yours,
Kathleen Sebelius
Governor of the State of Kansas

The Kansas Diabetes Plan outlines a comprehensive approach for reducing the burden of diabetes in our great state. It reflects the commitment and dedication of diabetes leaders representing over 40 organizations, programs and associations who came together to develop effective strategies for the prevention and control of diabetes in Kansas.

The Kansas diabetes community has a rich, innovative history of working together to improve diabetes care across the state. In 2004, the Kansas Diabetes Prevention and Control Program (DPCP) convened the Kansas Diabetes Advisory Council (KDAC) and other key partners from around the state to conduct the first comprehensive performance assessment of the Kansas Diabetes Public Health System (KDPHS). The KDPHS is comprised of multiple public, private, and voluntary organizations that operate statewide to provide support for diabetes prevention and control. Representatives from organizations that make up the System were invited to review and assess the performance of the KDPHS. The tool for conducting this assessment was based on the Essential Public Health Services (EPHS), which were developed in 1994 by national health policy leaders and adapted by the Kansas Diabetes Advisory Council (KDAC). The assessment identified gaps in the KDPHS and the results served to guide statewide improvement efforts that are embedded in the Kansas Diabetes Plan.

The Plan is intended to provide guidance for collaborative statewide efforts to reduce the burden of diabetes and improve the health of Kansans over the next five years. The Plan is organized by four priority areas and outlines five goals to address those areas. The priority areas include:

- Primary Prevention
- Quality of Care
- Patient Self-Management
- Policy and Advocacy

The five goals addressed in the plan include:

- Increase awareness of prevention and control of diabetes.
- Improve capacity to address the prevention and control of diabetes.
- Increase Kansas' health care workforce competency in diabetes standards of care.
- Improve awareness of and access to diabetes self-management information, programs and services.
- Influence public policy to support improving diabetes prevention, detection and care throughout Kansas.

This plan is a call to action, urging individuals, communities and organizations to take an active role in implementing the Kansas Diabetes Plan to improve quality and years of life for Kansans living with diabetes, reduce the complications of diabetes, reduce health disparities among Kansans living with diabetes and prevent new cases of diabetes. Together we can make a difference in the lives of people at risk for, or living with, diabetes.

Be Well,
Roderick L. Bremby
Secretary

Forward

July 2008

Diabetes is one of the most common, complex and costly chronic health conditions in Kansas as well as the United States. In Kansas, 7.1% of adults – more than 150,000 – have been diagnosed with diabetes and nearly 65,000 more have diabetes but are undiagnosed. People with diabetes are at increased risk of numerous serious and potentially deadly complications.

- The most life-threatening complication is **cardiovascular disease**. People with diabetes are at 3 to 5 times greater risk of developing cardiovascular disease than those without diabetes. The risk of stroke for people with diabetes is 2 to 4 times higher. More than 65% of deaths in people with diabetes are attributed to cardiovascular disease. Moreover, people with diabetes who smoke are 3 times more likely to die from heart disease than people with diabetes who don't smoke and have an increased risk for premature development of multiple complications of diabetes, including kidney disease and nerve damage.

- Diabetic retinopathy causes 12,000 to 24,000 new cases of **blindness** each year making diabetes the leading cause of new cases of blindness in adults 20-74 years of age.

- Diabetes is the leading cause of **kidney failure** in the United States. About 10% to 40% of people with type 2 diabetes eventually will suffer from kidney failure. In 2002, almost 154,000 persons with end-stage kidney disease due to diabetes were living on chronic dialysis or with a kidney transplant.

- About 60% to 70% of people with diabetes have mild to severe forms of **nervous system damage**, including impaired sensation to pain in the feet or hands, slowed digestion of food and carpal tunnel syndrome.

- More than 60% of non-traumatic **lower-limb amputations** occur in people with diabetes. In 2002, about 82,000 nontraumatic lower-limb amputations were performed in people with diabetes. The rate of amputation for people with diabetes is 10 times higher than for people without diabetes.

Obesity is one of the major risk factors for diabetes. If current trends in obesity and diabetes continue, children born in the United States in the year 2000 will face a 1 in 3 chance of developing diabetes at some point in their lives.

Diabetes research indicates that through reasonable lifestyle modification of physical activity and diet, this devastating disease can be prevented. Despite this promising research, however, diabetes prevalence rates continue to grow at epidemic proportions. Therefore, it is essential to address the full continuum of care of diabetes, progressing from primary prevention of the disease, to secondary and tertiary management interventions. Primary prevention interventions seek to delay or halt the development of diabetes through early detection of risk factors; secondary and tertiary prevention interventions focus on people with diabetes and seek to prevent (secondary) or control (tertiary) the devastating complications of this disease.

Strong collaborative partnerships offer great promise for successfully changing the course of diabetes in our state. Kansas is well positioned to prevent new cases of diabetes and improve the lives of Kansans living with and at risk for diabetes.

Richard Morrissey, Interim Director
Division of Health
Kansas Department of Health and Environment

The Kansas Diabetes Plan was made possible through the time, energy, expertise and dedication of individuals over the course of three years. We would especially like to thank those who devoted time to the Kansas Diabetes Advisory Council for developing the goals and strategies of the Plan, as well as those who participated in the assessment meetings around the state. Without their passion and dedication for Kansans affected by diabetes, this Plan would not exist.

Kansas Diabetes Advisory Council Members:	
Ann Gustafson, Pharm D	GlaxoSmith Kline
Anne Kimmel, MS, RD, BC-ADM, RN, CDE	United Methodist Mexican American Ministries
As'ad Ehtisham, MD, MBBS, FAHA	University of Kansas Medical Center
Beverly White	CEO, Center for Health and Wellness
Bill Dyar	American Diabetes Association
Carolyn Bland, PA	GraceMed Health Clinic
David Robbins, MD	University of Kansas Medical Center
Debbie Hinnen, ARNP, BC-ADM, CDE, FAAN	Mid-America Diabetes Associates
Debbie Johnson	National Kidney Foundation of KS/Western MO
Denice Curtis, DDS, MPH	Kansas Assoc.for the Medically Underserved
Diana Guthrie, Ph.D, ARNP, BC-ADM, CDE, FAAN	Mid-America Diabetes Associates
Donna Garwood, RN, BSN, CPHQ	Kansas Foundation for Medical Care
Doren Fredrickson, MD, Ph.D	University of Kansas Medical Center
Edward Ellerbeck, MD	University of Kansas Medical Center
Francisca Devora, RN	United Methodist Mexican American Ministries
George Ann Eaks, ARNP, CDE, BC-ADM	Riverview Health Services
Jennifer Brull, MD	Prairie Star Family Practice
Jill Lee, RN, MHS, CNOR	Preferred Health Systems
Jill Sumfest, MD, MS, FACS	Preferred Health Systems
Joan Booker, ARNP, CNS/CFNP, CDE	St. Catherine Hospital
Joan Hardy	Atwood Family Practice
Joshanna Stone, JD	Kansas African American Affairs Commission
Julia Francisco, MPH	Julia Francisco Consulting Services
Kathy Friesen	University of Kansas Medical Center
Linda Chansler, RN, CDE	PrairieStar Health Center
Belinda P Childs, ARNP, MN, CDE, BC-ADM	Mid-America Diabetes Associates, PA
Lisa Stehno-Bittel, Ph.D., P.T.	University of Kansas Medical Center
Lynn Fisher, MD	Lifeline Family Medicine
Mary Meck Higgins, Ph.D, RD, LD, CDE	Kansas State University
Mary Virden, MSE, RN	KU HealthPartners, Silver City Health Center
Melinda Krautman, MS, RN	KU HealthPartners, Silver City Health Center
Miriam Ibrahim, BS, OT, MPH	Reno County Health Dept.
Mona Broomfield, RN, BSN	PrairieStar Health Center
Nancy Copeland Lee, RN	Kansas Foundation for Medical Care
Olinda Harbaugh, RD, LD, MPH, CDE	Hunter Health Clinic
Patty Larraga, RN, BSN	Institute for Minority Health/ Education/Research
Rebecca Baca, RN, BSN	Institute for Minority Health/ Education/Research
Richard Guthrie, MD, FAAP, FACE CDE	Mid-America Diabetes Associates, PA
Richard Pruiksma, MD	Prairie Band Potawatomi Health Center
Sebe Masquat, RN	Prairie Band Potawatomi Health Center
Shirley Dinkel, Ph.D, ARNP, BC	Washburn University
Steve Corbett, MA	Prairie Band Potawatomi Health Center

Kansas Diabetes Advisory Council Members (Continued):

Stephanie Cundith, MS, RD, LD	Midwest Dairy Council
Tamara Tiemann, MS, RD, LD	Kansas Department on Aging
Travis Haas, MHSA	Kansas Health Policy Authority
Trudy Sims	University of Kansas Medical Center, Office of Continuing Education

Kansas Department of Health and Environment Program Staff:

Chris Tilden, PhD	Director, Office of Local and Rural Health
Cyndi Treaster, LSCSW	Kansas Department of Health and Environment
Farooq Ghouri, MD, MPH	Advanced Epidemiologist, BRFSS Program Manager
Ghazala Perveen, MD, PhD, MPH	Director of Science and Surveillance/Health Officer
Gloria Vermie, RN, MPH	Director, Rural Health
Joe Kotsch, RN, BSN, MS	Maternal and Infant/Perinatal Services
Kate Watson, MA, MPA	Program Manager, Diabetes Prevention and Control Program
Marti Macchi, M.Ed	Director, Special Studies
Misty Jimerson, MS	Program Manager, Heart Disease/Stroke Prevention Program
Paula Marmet, MS, RD, LD	Director, Office of Health Promotion, KDHE
Tara Schooler	Health Educator, Diabetes Prevention and Control Program
Teri Caudle, RN	Chronic Care Specialist, Diabetes Prevention and Control Program

VISION:

Kansans living free of diabetes and its complications.

MISSION:

To effectively improve the lives of Kansans living with and at risk for diabetes, and to prevent new cases of diabetes.

Table of Contents

Introduction **8**
National Public Health Goals 8
Kansas Public Health Goals 9
Prevention and Control of Diabetes 12

The Kansas Diabetes Plan **15**
Prevention 17
Quality of Care. 19
Patient Self-Management 23
Policy and Advocacy 27

How to Get Involved **30**

Measuring Progress **33**

Appendices **34**

The Kansas Diabetes Plan is intended to be a blueprint to guide collaborative statewide efforts to reduce the burden of diabetes and improve the health of Kansans over the next five years. This plan demonstrates a commitment to improving the Kansas diabetes public health system based on the national and state diabetes public health priorities.

National Public Health Goals

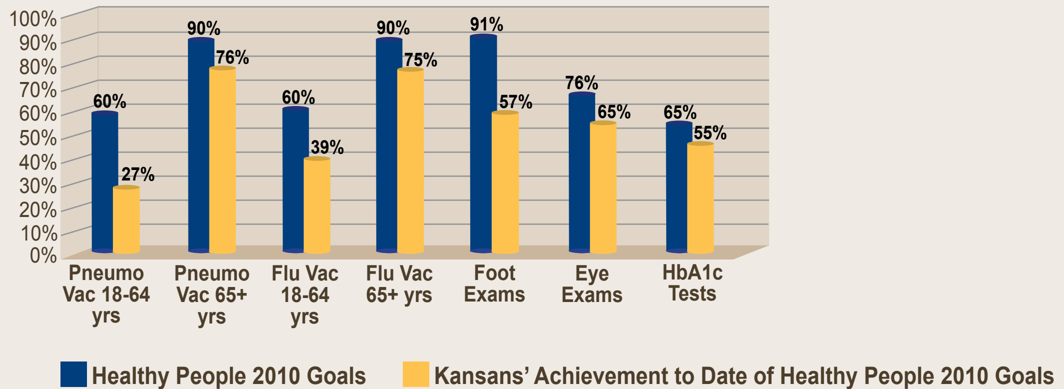
National public health goals for diabetes include 1) goals outlined in *Healthy People 2010* and 2) objectives developed by the Centers for Disease Control and Prevention.

1) *Healthy People 2010* is a set of health objectives for the nation to achieve over the first decade of the new century. It can be used by many different people, states, communities, professional organizations, and others to help them develop programs to improve health. The *Healthy People 2010* agenda focused on two primary goals:

- **Increase quality of years of healthy life.** This goal is designed to help individuals of all ages increase life expectancy and improve their quality of life.
- **Eliminate health disparities.** This goal is designed to eliminate health disparities among different segments of the population by specifically targeting the segments that need to improve the most.

Healthy People 2010 goals are supported by specific objectives in multiple health focus areas including diabetes. In Kansas, considerable progress has been achieved toward the *Healthy People 2010* objectives for preventive care measures for diabetes as shown in Figure 1.

Figure 1 ***Achievement to Date of Healthy People 2010 Preventive Care Measures in Adult Kansans With Diabetes***



Age-adjusted to 2000 U.S. Standard Population
Source: 2006 Kansas Behavioral Risk Factor Surveillance System

(See Appendix B for Kansas' performance on all *Healthy People 2010* Objectives for diabetes)

2)The Centers for Disease Control and Prevention (CDC), Division of Diabetes Translation has determined the national objectives for diabetes as follows:

- Increase the percentage of people with diabetes who receive:
  - o Recommended "A1c" tests
  - o Recommended annual flu vaccination
  - o Recommended pneumonia vaccination
  - o Recommended foot exams
  - o Recommended dilated eye exams

- Reduce diabetes related health disparities in high-risk populations.
- Establish programs for wellness, physical activity, weight and blood pressure control, and smoking cessation for people with diabetes.
- Establish measurement procedures to track program success in improving diabetes care.

Note: The Kansas Diabetes Prevention and Control Program (Appendix A) tracks and reports progress to CDC on Kansas' progress toward achieving the national objectives for diabetes.

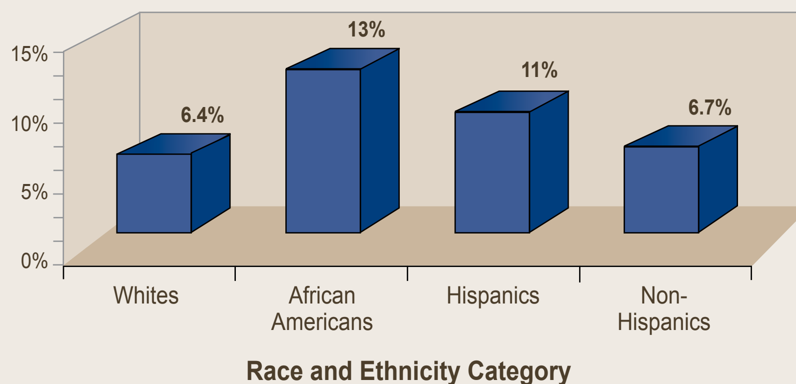
State Public Health Goals

State public health goals are outlined in *Healthy Kansans 2010*. *Healthy Kansans 2010* is the Kansas corollary to *Healthy People 2010*. *Healthy Kansans 2010* focuses on how health care providers, organizations, communities, and the state can encourage and provide opportunities for improving health outcomes in Kansas. Participants in planning *Healthy Kansans 2010* identified three crosscutting issues that are common to multiple health focus areas, including diabetes, and will result in the improvement of multiple leading health indicators:

1) **Reducing and eliminating health and disease disparities:** Health disparities stem from many factors, including race/ethnicity, age, gender, geography (rural/urban), social and economic status, and disability status.

   o Diabetes related health disparities for adults in high-risk populations continue to be a challenge in Kansas. In 2006, the age-adjusted prevalence of diagnosed diabetes in adult African Americans was 12.9% as compared to 6.4% in adult whites. Similarly, the age-adjusted prevalence of diagnosed diabetes in adult Hispanics was 10.7% as compared to 6.7% in adult non-Hispanics. (Figure 2)

Figure 2 **2006 Estimated Prevalence of Diabetes in Adults by Race and Ethnicity**



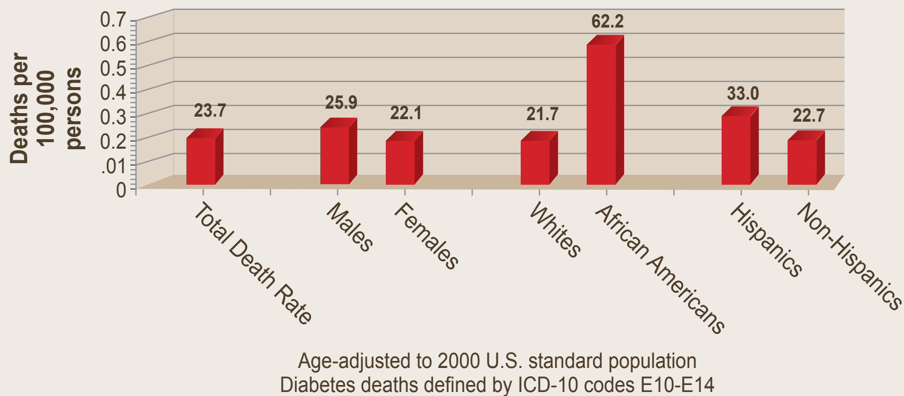
Source: 2005-2006 Kansas Behavioral Risk Factor Surveillance System
Age-adjusted to 2000 U.S. standard population

   o Health disparities are seen in diabetes death rates as well. The age-adjusted diabetes death rate, with diabetes mentioned as primary or underlying cause, was 23.7 per 100,000 persons. The age-adjusted diabetes death rate was higher among males (25.9 per 100,000 persons) as compared to females (22.1 per 100,000 persons). Similarly, African Americans (62.2 per 100,000 persons) had a higher age-adjusted diabetes death rate as compared to whites (21.7 per 100,000 persons). A higher age-adjusted diabetes death rate was also seen in Hispanics (33.0 per 100,000 persons) compared to non-Hispanics (22.7 per 100,000 persons) (Figure 3).

"The burden of diabetes, its cost in human suffering and health care costs, is on the rise. The time to act is now. Utilizing national and state public health goals will help address the burden of diabetes statewide. It is imperative that all Kansans work together to reduce the prevalence and impact of this devastating disease – the Kansas Diabetes Plan is our collaborative guide to reach that goal."

– Jennifer Brull, MD
Prairie Star Family Practice
Plainville, Kansas

Figure 3 ***Age-Adjusted Death Rate in Persons with Diabetes by Gender, Race and Ethnicity - Kansas 2005***



Age-adjusted to 2000 U.S. standard population
Diabetes deaths defined by ICD-10 codes E10-E14

2) System interventions to address social determinants of health: "Social determinants" – issues such as income, education, and social supports – impact the health of Kansans.

- Low income and education levels are associated with a higher burden of diabetes. About 14.7% of Kansans with an annual household income below $15,000 had diabetes compared to an estimated 5.3% of Kansans with an annual household income of $50,000 or above. In 2006, the prevalence of diabetes among Kansans with less than a high school education was 10.5% compared to Kansans with a college degree at 5.7%.

3) Early disease prevention, risk identification, and intervention for women, children and adolescents: Preventing potential health problems at the earliest possible point in life is crucial to increasing the number and quality of years of healthy life for Kansans.

- Type 2 diabetes is becoming increasingly common in children and adolescents. In addition, there is an increasing number of people who are at risk for developing diabetes due to poor eating habits, being overweight or obese, and having sedentary lifestyles. In 2006, nearly 50% of Kansas' adults were at risk of developing diabetes due to these very factors.

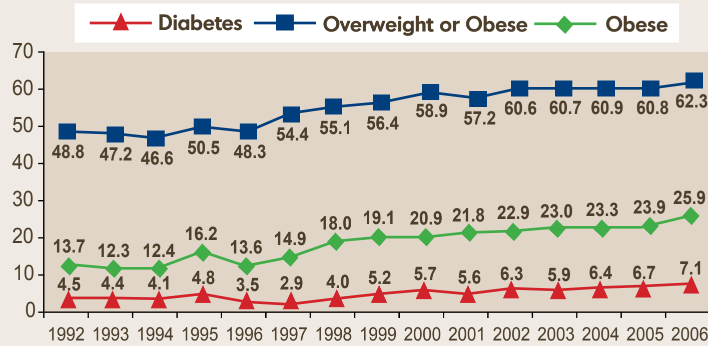
Prevention and Control of Diabetes

Diabetes related complications are serious but it should also be noted that the risk of complications can be reduced. The Diabetes Control and Complications Trial (DCCT), a clinical study conducted from 1983 to 1993 by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), showed that keeping blood sugar levels as close to normal as possible slows the onset and progression of eye, kidney, and nerve diseases caused by diabetes. In fact, it demonstrated that any sustained lowering of blood sugar helps, even if the person has a history of poor control. The study's findings are shown in the table below:

Complication	% Potential Risk Reduction
Eye Disease	76%
Kidney Disease	50%
Nerve Disease	60%

Many new cases of diabetes can be prevented through an integrated effort to increase the recommended level of physical activity, proper nutrition and a decrease in obesity. There is a strong correlation between obesity and the onset of type 2 diabetes. During the last ten years, an increase in number of people with diagnosed diabetes has paralleled the increased number of people who are obese. (Figure 4)

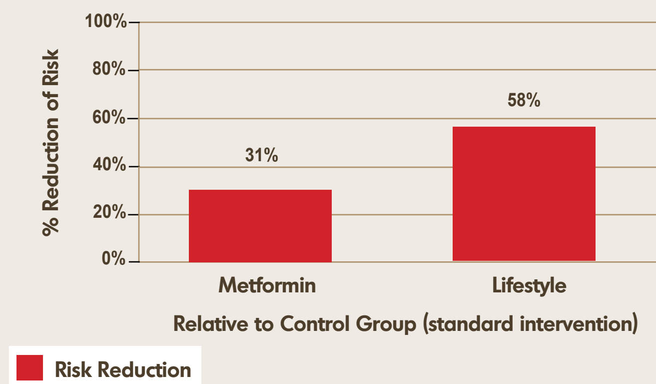
Figure 4 *Age Adjusted Prevalence of Diabetes, Overweight or Obese (BMI≥25kg/m²) and Obesity (BMI≥30kg/m2)*



Source: 1992-2006 Behavioral Risk Factor Surveillance System
Age Adjusted to 2000 U.S. Standard Population

There is good news. The Diabetes Prevention Program (DPP) was a major clinical trial, or research study, aimed at discovering whether either diet and exercise or the oral diabetes drug Metformin (Glucophage) could prevent or delay the onset of type 2 diabetes in people with impaired glucose tolerance (IGT). The answer is yes. In fact, the DPP found that over the 3 years of the study, diet and exercise sharply reduced the chances that a person with IGT would develop diabetes by 58%. Metformin also reduced risk, although less dramatically by 31%. (Figure 5) The DPP resolved these questions so quickly that, on the advice of an external monitoring board, the program was halted a year early. The researchers published their findings in the February 7, 2002, issue of the *New England Journal of Medicine.*

Figure 5 *Summary Findings of the Diabetes Prevention Program*



"Kansas is taking the lead in fighting the pandemic of diabetes through innovation, partnerships, technology, communication and education."

– David C. Robbins, MD, Professor of Medicine, Section of Endocrinology, Kansas University

Diabetes State Plan 2008-2013

Prevention

Quality of Care

Patient Self-Management

Policy and Advocacy

The purpose of the Plan is to improve the quality and years of life for Kansans living with diabetes, reduce the complications of diabetes, reduce health disparities among Kansans living with diabetes, and prevent new cases of diabetes.

Prevention

Primary prevention interventions seek to delay or halt the development of diabetes. Secondary and tertiary prevention interventions focus on people with diabetes and seek to prevent (secondary) or control (tertiary) the devastating complications of this disease.

Goal – Increase awareness of prevention and control of diabetes.

Strategy 1: Develop and disseminate a comprehensive report on the burden of diabetes and its risk factors targeted to the general public.

Action Steps:

- Prepare a Kansas Diabetes Burden Report.
- Develop a collaborative plan with partners to disseminate the Kansas Diabetes Burden Report to communities across the State.
- Assure that the Kansas Diabetes Burden Report is updated in a timely manner.

Strategy 2: Educate community members about the risk factors for diabetes.

Action Steps:

- Develop user-friendly (including braille, large print, audio) and culturally appropriate public awareness materials.
- Collaborate with local partners to develop and implement a communication plan to educate community members about the risk factors for diabetes.
- Develop an education program targeting people with pre-diabetes and undiagnosed diabetes.

Goal – Improve capacity to address the prevention and control of diabetes.

Strategy 1: Develop the capacity to identify, and implement interventions for, Kansans at risk for diabetes.

Action Steps:

- Review the results of the Kansas Diabetes Primary Prevention Pilot Study that identified the infrastructure needed to address primary prevention of diabetes (Appendix E).
- Utilize the results of the Kansas Diabetes Primary Prevention Pilot Study to develop capacity building initiatives in collaboration with local partners.
- Target the following settings to identify Kansans at risk for diabetes:
  - o Schools
  - o Worksites
  - o Health care systems
  - o Faith-based/community organizations.

- Utilize existing pre-diabetes assessment tools.
- Facilitate planning, implementation and evaluation of nutrition, physical activity, tobacco prevention and obesity prevention programs using evidence-based strategies.

Strategy 2: Assure the availability of regular, ongoing professional education opportunities that include prevention strategies for health care professionals who provide diabetes care.

Action Steps:

- Develop and disseminate culturally appropriate education materials to health care providers.
- Assess and enhance existing cultural competency training courses.
- Promote the utilization of evidence-based chronic disease prevention and management strategies by primary care providers.
- Promote national guidelines for prevention of diabetes and treatment of risk factors for diabetes.
- Promote and enhance components for managing pre-diabetes in professional education programs.

Quality of Care

Diabetes is recognized as one particular chronic disease for which quality improvement efforts can make great strides. Diabetes has widely respected national guidelines for what constitutes quality care and well-developed national measures of quality. Despite this fact, the gap between evidence-based treatment and actual practice and outcomes continues to be wide. There continues to be a large number of complications from diabetes that research demonstrates could have been prevented with high quality care. States can play a key role in fostering diabetes quality improvement.

Goal – Increase Kansas' health care workforce competencies in diabetes standards of care.

Strategy 1: Assure that physicians, physician assistants, advanced registered nurse practitioners and nurses achieve competency in diabetes care.

Action Steps:

- Coordinate training and certification opportunities with professional organizations and licensing bodies.
- Identify and utilize existing diabetes quality of care trainings that include culturally appropriate content.
- Develop and utilize new trainings as needed.
- Ensure the curriculum for medical, nursing and physician assistant students is current and includes information on working with people with disabilities.
- Increase competency of health care professionals in diabetes quality of care by utilizing the most recent, vigorous scientific research currently being translated into practice.

"I've had Type 2 diabetes for about 15 years. I'm only in my 40s and I've had both of my feet amputated due to complications of diabetes and I'm now on dialysis due to kidney failure. For years, I had the same doctor who told me that a blood sugar of 200 was just fine. I know now that a consistent blood sugar of 200 is what created these horrible complications. I now have a good doctor who has helped me get my blood sugar under control – but the damage is done." — *Wyandotte County Resident*

Strategy 2: Assure that nutritionists, pharmacists, diabetes educators and exercise physiologists achieve competency in diabetes care.

Action Steps:

- Coordinate training and certification opportunities with professional organizations and licensing bodies.
- Identify and utilize existing diabetes quality of care trainings that include culturally appropriate content and information on how to work with people with disabilities.
- Develop and utilize new trainings as needed.
- Ensure that the curriculum for nutritionists, pharmacists, diabetes educators and exercise physiology students is current.
- Increase competency of health care professionals in diabetes quality of care by utilizing the most recent, vigorous scientific research currently being translated into practice.

Note: Training components for diabetes care will differ between the health care professionals described in Strategy 1 and Strategy 2.

Strategy 3: Increase utilization of electronic health records (EHR) to improve diabetes management.

Action Steps:

- Identify and disseminate information on existing EHR resources.
- Ensure EHR development efforts are coordinated throughout the state.
- Work with public and private payers to develop incentives for implementation of EHR systems.
- Coordinate efforts with the Governor's Commission for Health Information Exchange/Health Information Technology and other relevant task forces/workgroups.

Strategy 4: Develop a statewide diabetes registry to be used as a surveillance system to track quality of care improvement statewide.

Action Steps:

- Form a sub-committee of the Kansas Diabetes Task Force* to oversee development and implementation of the registry.
  - o Review a sample of established registry systems to model from.
  - o Determine the components of the registry.
  - o Identify data that is currently collected.
  - o Determine data that needs to be collected.
  - o Collaborate with key partners to design the registry.
  - o Build the infrastructure for data collection.

**The Kansas Diabetes Task Force is described in the Policy and Advocacy Section on page 27.*

Strategy 5: Increase networking opportunities for health care providers to share quality of care best practices at the state and local level.

Action Steps:

- Create and maintain regional directories of diabetes health care providers and organizations.
- Develop and implement a communication/dissemination plan for raising awareness about diabetes quality of care issues and best practices.
  - o Post best practices on the Kansas Diabetes Prevention and Control Program website.
- Develop a plan for sustaining partner engagement.

Strategy 6: Expand the number of health care professionals in rural areas.

Action Steps:

- Identify challenges/barriers to recruiting and retaining health care providers in rural areas.
- Utilize the Health Professional Shortage Area (HPSA) designated locations in Kansas, created by the Office of Local and Rural Health, to determine the areas of greatest need.
- Develop a plan for enhancing rural health care systems to assist health care providers in the provision of diabetes quality of care in rural areas.
- Increase health care provider awareness of incentive programs to recruit and retain health care providers in rural areas.

Quality of Care

Patient Self-Management

Self-management activities are undertaken by an individual to control and monitor their diabetes outside the clinical setting. More than 90 percent of diabetes care is self-care. Self-care can include monitoring blood glucose levels, following a treatment plan, eating healthy, exercising, losing weight, checking for foot ulcers, attending classes and support groups, and scheduling regular clinical examinations and testing.

Goal – Improve awareness of and access to diabetes self-management information, programs and services.

Strategy 1: Identify diabetes self-management programs and services.

Action Steps:

- Conduct statewide and regional assessments of diabetes related programs and services to identify areas of excellence as well as areas in need of improvement. The assessment should include:
  - o Populations with little or no access to diabetes self-management programs and services.
  - o Cost effective programs and services.
  - o Service delivery system effectiveness.
  - o Populations with mobility limitations.
- Analyze the results of the assessment to identify gaps in diabetes self-management programs and services.
- Utilize the results of the assessment to create and maintain regional directories of diabetes self-management programs and services.
- Combine the directories with the regional directories of diabetes health care providers and organizations described in the Quality of Care section on page 20.
- Post directories on the Kansas Diabetes Prevention and Control Program website.

Strategy 2: Improve public access to diabetes self-management information.

Action Steps:

- Identify resources that provide information to patients with diabetes about:
  - o The role of weight management and physical activity in self-management of diabetes.
  - o Signs and symptoms of diabetes.
  - o Blood sugar control, lipid control and blood pressure control.
  - o Definitions of normal ranges for blood sugar, HbA1c, lipid profile, and blood pressure.
  - o Explanation of complications of diabetes and strategies for slowing the progression of complications.
- Identify ADA recognized education programs and providers.
- Combine the information collected in the two bullets above and post on the Kansas Diabetes Prevention

"Can you tell me where I can go for diabetes education? My doctor just diagnosed me with Type 2 diabetes and wouldn't take time to tell me about how to take care of this at home. He said I should go to a diabetes self-management class to get that information. The place he referred to costs $500 for the 5-day class and my insurance won't cover it. The doctor said I need to check my blood sugar regularly but I'm not sure how to do even that!"

– Geary County Resident

and Control Program's website.
- Ensure information posted on the website is:
    - o Accessible to the visually impaired.
    - o Available in a variety of languages.
- Ensure that the Kansas Diabetes Prevention and Control Program's website links to other appropriate resources including the American Diabetes Association website.

Strategy 3: Provide evidence-based practice guidelines and information about diabetes patient self-management to health care professionals.

Action Steps:
- Determine the resources needed most by health care professionals:
    - o Conduct surveys, focus groups, and literature search.
    - o Identify and review national resources.
- Develop a page dedicated to health care professionals on the Kansas Diabetes Prevention and Control Program's website to house diabetes self-management information that includes:
    - o Interactive web education programs
    - o Videos
    - o Links and downloadable information.
- Establish a system for updating information and submitting new information.
- Develop and implement a communication plan to inform health care professionals about the availability of information on the Kansas Diabetes Prevention and Control Program website.

Strategy 4: Enhance diabetes patient self-management training opportunities for health care professionals.

Action Steps:
- Develop training programs for health care professionals to implement Continuous Quality Improvement processes for diabetes patient self-management.
- Raise awareness about existing training opportunities.
- Review model programs that have successfully translated research to practice.
- Develop an implementation plan based on the review of model programs.
- Develop training programs for health care professionals about the psychosocial consequences of diabetes.

Strategy 5: Develop relationships with organizations that provide care and/or resources for diabetes patient self-management in low-income and racial/ethnic groups.

Action Steps:
- Partner with organizations that work with low-income and racial/ethnic population groups to develop culturally appropriate strategies for long-term monitoring and follow-up.
- Provide cultural competency training to providers regarding low-income and racial/ethnic populations.
- Identify corporations that would be willing to sponsor an initiative targeted toward improving diabetes services to low-income, underserved and racial/ethnic populations.

Strategy 6: Develop behavior modification interventions to motivate and educate patients to improve diabetes management and ensure that health care providers are partners in that process.

Action Steps:

- Develop strategies to motivate patients by:
  - o Conducting focus groups with providers and patients
  - o Conducting key informant interviews
  - o Conducting a literature review.
- Develop a patient empowerment program that focuses on increasing skills to more effectively communicate with providers.
- Review studies that examine the psychological attitudes and needs of people with diabetes and share results with health care providers.
- Develop a media campaign targeted to people with diabetes to raise awareness about self-management issues.
- Establish a diabetes hotline targeted to people with diabetes.
- Investigate alternate ways for patient self-management education including:
  - o Pod casts
  - o Internet-based interactive classes
  - o Cell phone messaging
  - o Website patient education programs

Strategy 7: Initiate a collaborative effort to bring together the various diabetes entities (people and programs) to improve the effectiveness of diabetes self-management programs and services.

Action Steps:

- Develop a resource list with contact information that includes a description of all professional diabetes efforts around diabetes self-management, care and prevention activities.
- Update and distribute the resource list either quarterly or biannually to targeted audience.
- Develop a comprehensive system for linking patients with diabetes and those at high risk for diabetes to providers.
- Strengthen coalition-building activities among partners at state and local levels to focus on patient self-management issues.
- Modify CDC's "Diabetes at Work" model and pilot test the worksite program across the state.
- Identify diabetes self-management efforts in schools and expand on those efforts.
- Identify regional resources ("local experts") for health care professionals to increase referral opportunities for diabetes self-management services.
- Recognize and promote diabetes networks that currently exist.

"An older Hispanic couple in their 70's, both of whom have diabetes and other medical problems, came in for assistance to our program. They were not able to apply for any kind of medical assistance programs, Medicare, or Social Security to help pay for medications. The clinic has been able to provide some assistance with medications, but there are some services they needed that could not be covered by the clinic. They are unable to work and currently live with a son because their trailer home burned down. We had them visit with the dietitian to learn how to better control their diabetes by educating them about nutrition. However, it was extremely difficult to implement a meal plan because they could barely understand what was being taught. Complicating the matter is that they depend on food they receive from the food pantry and don't have much family support. We try the best we can to help teach them how to manage their diabetes, but with so many obstacles it continues to be a struggle."

– Garden City Community Health Clinic

Policy and Advocacy

There are many people with diabetes who are uninsured or underinsured and cannot access the supplies, medications, and education necessary to successfully manage the disease and prevent diabetes-related complications such as heart disease, stroke, kidney failure, blindness, and lower-limb amputation. Advocacy efforts are critical for influencing public policy to assure that people with diabetes have the necessary tools for effectively managing their disease.

Goal – Influence public policy to support improving diabetes prevention, detection and care throughout Kansas.

Strategy 1: Form a Diabetes Task Force to review and recommend strategies to address emerging diabetes issues.

Action Steps:

- Determine the process for forming a Diabetes Task Force with the Governor's endorsement.
- Draft a document/letter outlining the need for a task force for the Governor's consideration.
- Prepare a list of potential members for the Governor's consideration.
- Develop a list of emerging diabetes issues for the Task Force to review.
  - The list should include identification of funding sources to support Primary Prevention, Quality of Care and Patient Self-Management strategies and action steps.
- Develop a draft action plan by Task Force members for addressing emerging diabetes issues.
  - Include draft legislation for State sanctioned "Diabetes Recognized Centers" to offset the stringent requirements of the American Diabetes Association recognition program.

"Please help me! I have had Type 1 diabetes since I was 12 years old and I am now in my 40s. I'm unable to work due to complications of diabetes. I have lost one lower leg and I am having problems in my other leg. I don't have health care insurance. I'm almost out of insulin and I don't have enough money to buy any. The community health clinic said I couldn't access their low cost services because my Social Security income is too high to be eligible. I will be out of insulin in a few days and I don't want to end up in the emergency room with ketoacidosis like I've done in the past."

– Topeka Resident

Strategy 2: Develop and implement a plan to organize diabetes advocates.

Action Steps:

- Recruit diabetes advocates from the following:
  - American Diabetes Association, Kansas Medical Society, Kansas Academy of Family Physicians, Kansas Foundation for Medical Care, Kansas Association for the Medically Underserved, Kansas Nurses Association, Diabetes support groups, Association of Diabetes Educators in Kansas, League of Kansas Municipalities, Kansas Association of Counties, diabetes clinics, health plan representatives, and other interested organizations and citizens.
- Identify a diabetes advocate champion who has knowledge about the legislative process.
- Develop and implement a plan to educate diabetes advocates on the Kansas legislative process.
- Develop an action plan for diabetes advocates.

Strategy 3: Develop and implement a plan to raise awareness and secure support from the Kansas Legislature for education and health care service initiatives that benefit underserved Kansans at risk for or affected by diabetes.

Action Steps:

- Develop a media plan to raise awareness of legislators and the general public about diabetes health care service initiatives.
- Collect and disseminate data and information regarding the status of diabetes in Kansas.
- Review existing laws and regulations related to diabetes care, prevention and detection.
- Develop a plan for addressing the gaps between existing laws and regulations and identified policy goals.
- Identify key diabetes issues for legislators to address including legislation to provide reimbursement for diabetes screening and preventative services.

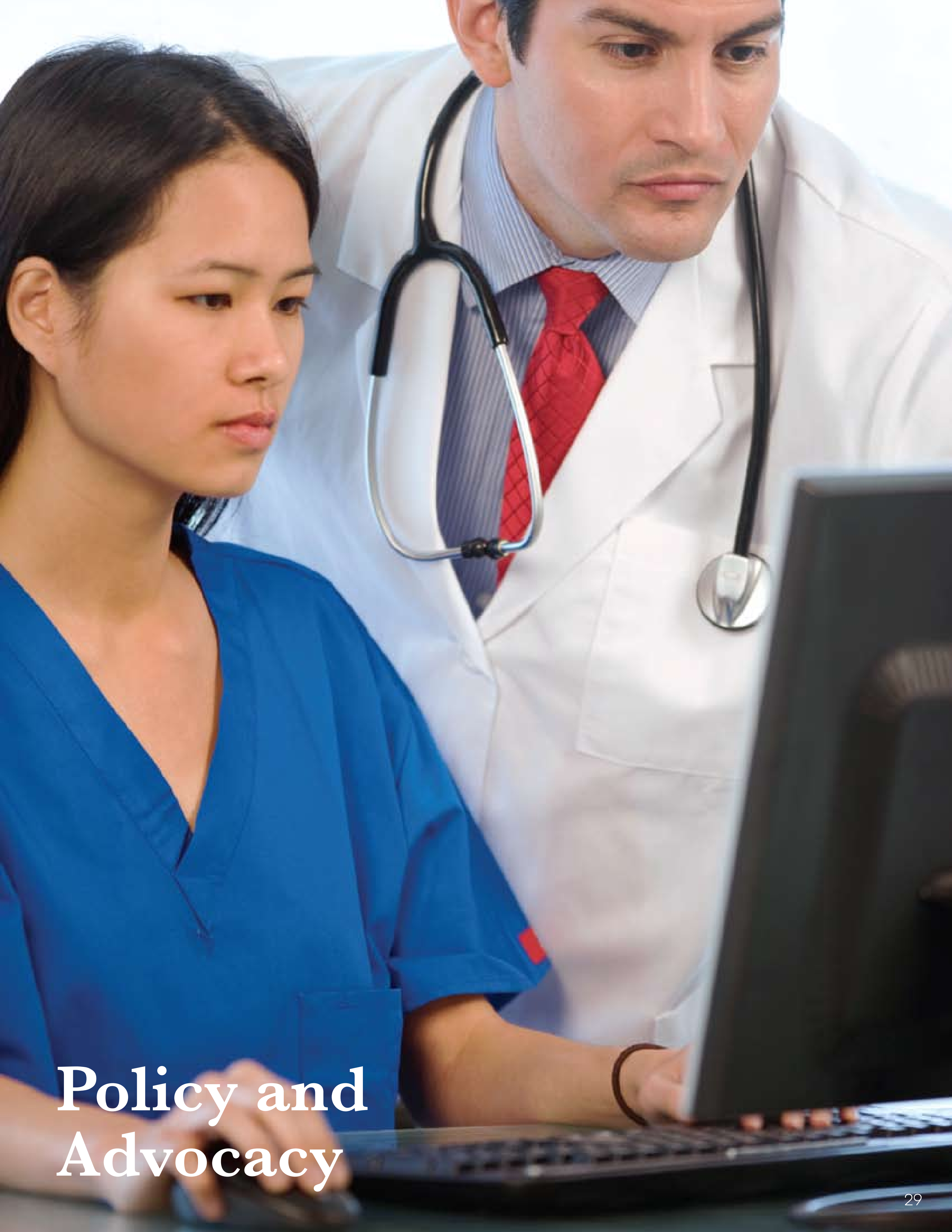
Strategy 4: Develop a plan to raise awareness among city and county officials about emerging diabetes issues.

Action Steps:

- Provide city and county officials with general diabetes data and information to increase knowledge and understanding of diabetes care.
- Create and disseminate a one-page handout with "talking points" highlighting why diabetes issues need to be addressed.
- Partner with local coalitions to educate local officials about emerging diabetes issues.

"My doctor had me on a medication that was really helping to get my diabetes under control. But the cost of the medication was so high that I could not continue using it. I have to take medications for hypertension, high cholesterol and arthritis and I can't afford all of them because the co-pay is so high, so I have to choose which medicines I can take and which ones I have to cut out. Some months it's a matter of either taking my medicine or paying the rent. I work three jobs and I still can't afford the medication – and working that much has compromised my health even more. Consequently my A1c this past year averages around 8.7. I'm starting to have problems with my eyes and feet but I just don't know where to turn for help."

– Wichita Resident



Policy and Advocacy

How to Get Involved

The *Kansas Diabetes Plan* is a call to action for Kansans to work collaboratively on reducing the growing burden of diabetes in Kansas.

This is a *Plan* for the entire State of Kansas. In order to achieve the *Plan* goals, many partners will need to work together to explore creative solutions for implementing change to systems, communities, and individual behaviors. Diabetes has become a problem of epidemic proportion that cannot be solved by a single organization, group, or individual. By public and private partners working together, we can implement the *Plan's* goals that may prevent or delay the onset of diabetes in Kansans and improve care for those already living with diabetes.

What You Can Do

1. Review the Plan's goals, strategies and action steps. Identify activities that your organization is working on or would like to address.
2. Become an active partner with the Kansas Diabetes Prevention and Control Program and others in implementing the Plan.
3. Register your support for the Plan. Registration is open to anyone involved in current diabetes prevention and control activities or anyone with new ideas or an interest in being involved.
4. Partner with other Plan registrants or someone/organization that shares your goals to maximize your impact on reducing the burden of diabetes.

How to Register Your Support

You can register your support for the *Kansas Diabetes Plan*:

- Print out and complete the form on the following page. Fax the form to the Office of Health Promotion at (785) 296-8059, or
- View the following website http://www.kdheks.gov/diabetes/index.htm. Click on the Kansas Diabetes Plan Registration Form, fill out the form, save the form to a hard drive, and then send the saved form to ohp@kdhe.state.ks.us.

KANSAS DIABETES PLAN REGISTRATION FORM

Instructions: Fill out the form. Save the form to your hard drive. Email the saved form to ohp@kdhe.state.ks.us or print a copy and fax to the Kansas Diabetes Prevention and Control Program at (785) 296-8059.

Important Note: Your support for this Plan may be publicly acknowledged on the Kansas Diabetes Prevention and Control Program website and in *Plan* related materials.

1. I am supporting the Kansas Diabetes Plan as an:

____Individual ____Organization

2. Provide your name and name of the organization/group you represent.

____

3. Indicate what type of organization you represent. (You may check more than one)

___Coalition
___Communication/Media
___Community Group
___Faith Community Group
___Food Service/Restaurant
___Government Agency
___Health Care Delivery
___Health Plan/Insurer
___Non-Profit Agency
___Professional Association
___Public Health Department
___Recreational/Sports
___Research Institution
___Retail/Business/
___School/College/University
___Worksite/Employer
___Other

4. Indicate whether or not you will provide a link from your organization's website to the Kansas Diabetes Plan located at http://www.kdheks.gov/diabetes/index.htm

___Yes ___No

Website link____

5. Please list the activities that you and/or your organization can work on to help accomplish the Plan goals.

____

____

____

Contact Name_______________________________________**Credentials**______________

Organization (If Applicable)____

Position/Title____

Mailing Address____

Telephone No.__________________________**Fax No.**___________________________

Email____

Measuring Progress

What is evaluation?

Evaluation is the process of analyzing programs and interventions in the context within which they occur to determine if changes need to be made in implementation. The evaluation process used in Kansas will attempt to determine as systematically and objectively as possible the relevance, effectiveness, and impact of the program and interventions. Evaluation findings will help determine adjustments that need to be made at any given point during the implementation process.

Why is evaluation important?

Evaluation is a tool that can both measure and contribute to the success of a program or intervention in a number of ways that include:

- *Forming the basis for making choices about the use of limited resources*
- *Providing information to improve program effectiveness*
- *Ensuring funding and sustainability*
- *Providing a source of information for making midcourse corrections*
- *Providing the basis for deciding the direction for future programs and interventions.*

How will the evaluation be conducted?

The Kansas Diabetes Prevention and Control Program (DPCP) will coordinate the evaluation efforts and track successes, challenges and lessons learned as partners work to implement interventions. To that end, the DPCP will develop a tracking tool that will systematically gauge progress throughout the implementation of the Plan. Information gathered utilizing the tracking system will support the ongoing assessment of the progress.

- *Assessment Process – The DPCP will convene partners from around the state to conduct a comprehensive performance assessment of the Plan goals, strategies and action steps. The purpose of the assessment will be to identify the progress that has been made and what still needs to be accomplished.*

- *Assessment Methodology – The DPCP will facilitate a three-tiered cumulative approach to the assessment. Chronic disease prevention and control staff within the state health department will comprise the first-tier assessment group and stakeholders from across the state will comprise the second- and third-tier assessment groups. Progress on the Plans goals, strategies and action steps will be identified by the first-tier group and then will be reviewed and added to by the second-tier participants. The same process will be repeated for the third-tier participants.*

Ongoing performance assessment of the progress will be used to guide future directions in Kansas for diabetes prevention and control initiatives.

Appendices

Appendix A..........Kansas Diabetes Advisory Council, Kansas Diabetes Prevention and Control Program, Kansas Diabetes Public Health System

Appendix B..........Healthy People 2010 Preventive Care Practice Chart

Appendix C..........Types of Diabetes, Diabetes Signs, Symptoms and Complications

Appendix D..........The Impact of Diabetes in Kansas

Appendix E..........Diabetes Primary Prevention Action Plan

Appendix F..........Definition of Terms

Appendix G..........Resources

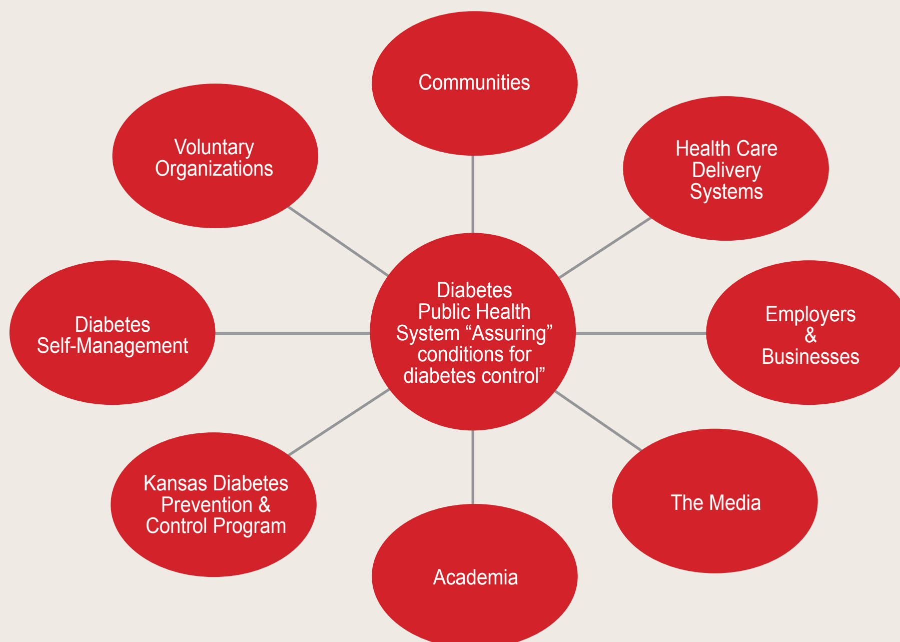
Appendix A

Kansas Diabetes Advisory Council

The Kansas Diabetes Advisory Council (KDAC) is comprised of people with an interest or expertise in diabetes prevention and control who represent health care delivery systems, professional and voluntary organizations, academic institutions, faith-based organizations, and people with diabetes. Formed in 1989, the KDAC's purpose is to:

- Guide the development and oversee the implementation of the Kansas Diabetes Plan.
- Provide guidance and expertise to the Kansas Diabetes Prevention and Control Program's activities.
- Foster communication, increase and sustain partnerships and enhance capacity building within the Kansas Diabetes Public Health System.

Kansas Diabetes Public Health System



- Increase public and provider awareness of diabetes.
- Advocate for legislation, policies and programs to improve access to care and to improve the treatment and outcomes for Kansans with diabetes.
- Represent public and private partners to coordinate activities that promote quality of care for Kansans with diabetes.
- Develop state capacity for effectively addressing the primary prevention of diabetes.
- Foster interagency collaboration and networking for identification, utilization, and expansion of resources for diabetes control services.

The KDAC has four workgroups that are organized around the priority areas identified through a strategic planning process. The workgroups include:

Primary Prevention: This workgroup addresses issues around pre-diabetes, overweight and obesity, nutrition and physical activity, and other relevant issues.

Quality of Care: This workgroup focuses on standards of care, access to services, and other relevant issues.

Patient Self-Management: This workgroup focuses on barriers to patient self-management including culture, language, and cost issues.

Policy/Advocacy: This workgroup focuses on assessing current policy issues including reimbursement barriers and advocacy strategies for securing additional funding.

Kansas Diabetes Prevention and Control Program

The Kansas Department of Health and Environment's Diabetes Prevention and Control Program (DPCP) was established in 1987 through funding from the federal Centers for Disease Control and Prevention (CDC). The DPCP is devoted to improving the health of Kansans at risk for or with diabetes by:

- Facilitating statewide partnerships with healthcare systems, communities and other stakeholders.
- Coordinating statewide efforts to improve diabetes quality of care.
- Collecting and disseminating diabetes surveillance and evaluation data for program development and policy guidance.
- Facilitating outreach efforts to address health disparities in high-risk populations.
- Developing and promoting population-based community interventions.
- Developing and promoting culturally appropriate health communications.

Program Highlights

Kansas Diabetes Advisory Council

Purpose: To improve the state's strategic direction and the state diabetes health system's infrastructure.
Description: The Council is composed of 50+ participating members representing organizations in government, health care systems, academia, insurance and others. The Council structure includes the general membership, steering committee and workgroups. KDAC is the lead organization for developing the strategic direction for addressing diabetes issues/gaps in Kansas.

Statewide Diabetes Quality of Care Project

Purpose: To improve the quality of care for diabetes patients.
Description: The Diabetes Quality of Care Project is in its fourth year and is being implemented in forty-four healthcare organizations around the state. The participants of this project implement the Chronic Care Model and utilize the Chronic Disease Electronic Management to track standards of care in patients with diabetes. The projected patient registry across all sites is about 14,000 Kansans with diagnosed diabetes.

School Personnel Training Program for Managing Students with Diabetes

Purpose: To educate school personnel about diabetes and to share a set of practices that enable schools to ensure a safe learning environment for students with diabetes.
Description: The DPCP facilitates a train-the-trainer program to train school nurses and other school personnel in basic diabetes care in order to help students with diabetes succeed in an academic environment.

Lay Health Worker Program

Purpose: To increase access to and awareness of diabetes self-management education and skills to minority, low income and underserved populations.
Description: The DPCP works with healthcare organizations in Wichita and Garden City to implement the Lay Health Worker Program in the Hispanic and African American populations within these communities. Diabetes education has long been held as a cornerstone for effective diabetes care and this program will improve access to culturally appropriate diabetes self-management education.

Diabetes Quality of Care Conference
Purpose: To provide access to the most current information related to diabetes clinical improvements, diabetes self-management strategies, standards of diabetes care, and diabetes primary prevention strategies.
Description: The Diabetes Quality of Care Conference attracts speakers from around North America and Canada to provide continuing education appropriate for physicians, physicians assistants, nurse practitioners, nurses, dietitians and others who are involved either directly or indirectly in providing care to people with diabetes.

Chronic Disease Self-Management Program (Kansans Optimizing Health Program)
Purpose: To provide self-management education to people who are living with chronic disease, including people with diabetes.
Description: The Kansas Optimizing Health Program (KOHP) was developed utilizing Stanford University's Chronic Disease Self-Management Program (CDSMP) curriculum. The program consists of a six week workshop designed to help people who live with chronic disease learn skills that can assist them with the daily management of symptoms associated with chronic disease and to maintain and/or increase life's activities.

Kansas Diabetes Plan
Purpose: To improve the lives of Kansans living with and at risk for diabetes and to prevent new cases of diabetes.
Description: The Kansas Diabetes Plan serves as a blueprint for the development of a comprehensive and balanced system for linking diabetes resources. Representatives from communities, healthcare delivery systems, businesses, media, academia, DPCP, diabetes self-management services and voluntary organizations are represented on the Kansas Diabetes Advisory Council (KDAC) which was the lead organization in the development of the Plan.

Kansas Diabetes Burden Report
Purpose: To provide data for stakeholders to support decisions regarding diabetes activities.
Description: The Kansas Diabetes Burden Report is necessary to obtain population-based information/data for planning, implementing and evaluating efforts to reduce the burden of diabetes in Kansas. The Burden Report will be published in Summer 2008 and updated as necessary.

Appendix B

Kansas Performance on Healthy People 2010 Objectives for Diabetes

HP 2010 Objective	Current Kansas Status	HP 2010 Goal
Increase proportion of persons with diabetes who receive formal diabetes education	55.1% *	60%
Prevent diabetes	12 new cases per 1,000 population per year ******	3.8 news cases per 1,000 population per year
Reduce overall rate of diabetes that is clinically diagnosed	71 cases per 1,000 population*	25 cases per 1,000 population
Increase proportion of adults with diabetes whose condition has been diagnosed	70%***	78%
Reduce the diabetes death rate	70.8 deaths/100,000 population **	46 deaths/100,000 population
Reduce diabetes-related deaths among persons with diabetes	5.4 deaths per 1,000 persons with diabetes **	7.8 deaths per 1,000 persons with diabetes
Reduce deaths from cardiovascular disease in persons with diabetes	171.4 deaths per 100,000 persons with diabetes **	299 deaths per 100,000 persons with diabetes
Reduce the rate of lower extremity amputations in persons with diabetes	24.1 lower extremity amputations per 10,000 persons with diabetes ****	1.8 lower extremity amputations per 1,000 persons with diabetes per year
Increase proportion of adults with diabetes who obtain an annual urinary microalbumin measurement	No Kansas data available that is directly comparable to HP2010 target	14 %
Increase proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year	90.3% with at least one glycosylated hemoglobin measurement annually 55% with at least two glycosylated hemoglobin measurements annually *!	65%
Increase proportion of adults with diabetes who have an annual dilated eye exam	65.5% *	76%
Increase proportion of adults with diabetes who have at least an annual foot exam	57.4% *	91%
Increase proportion of persons with diabetes who have at least an annual dental exam	72.0% ******	71%
Increase proportion of adults (40 years and older) with diabetes who take aspirin at least 15 times per month	64.3% (2005 KS BRFSS)	30%
Increase proportion of adults who perform self-blood-glucose monitoring at least once daily	62.0% *	61%

* 2006 KS BRFSS age adjusted to the year 2000 standard population
** 2004-2005 KS Vital Statistics data, age adjusted to the year 2000 standard population
*** Based on CDC estimate of 70% diagnosed cases of diabetes
**** 2004-2005 KS Hospital Discharge Data, age adjusted to the year 2000 standard population
***** 2004-2005 KS BRFSS, age adjusted to the year 2000 standard population
****** 2004 KS BRFSS, age adjusted to the year 2000 standard population
! Statistically significant at 95% confidence interval from 2005 prevalence of 77%. Continuous monitoring and follow-up needs to continue overtime to determine whether it is a real decline or just a one point in time decrease in the proportion of adults who had their Hemoglobin A1c measured at least twice annually.

Appendix C

Types of Diabetes

Type 1 Diabetes

Type 1 diabetes, previously called insulin dependent diabetes or juvenile onset diabetes, is an autoimmune disease that is usually diagnosed in children, teenagers and young adults. In type 1 diabetes, the body's mechanism to fight infection (immune system) attacks or destroys the insulin-producing beta cells in the pancreas. A person who has type 1 diabetes must take insulin, either by injection or insulin pump, everyday to live. Risk factors for type 1 diabetes include autoimmune, genetic and environmental factors. Type 1 diabetes accounts for 5-10 % of all diagnosed cases of diabetes.

Type 2 Diabetes

Type 2 diabetes, previously called adult-onset diabetes is the most common form of diabetes in adults. People with type 2 diabetes produce insulin, but either do not make enough insulin or their bodies do not use the insulin they make. Treatment includes oral medications, often in combination with other types of therapy. Risk factors for type 2 diabetes include:

- Family history in one or more first degree relatives
- For women, a previous history of gestational diabetes or delivering a baby weighing more than 9 pounds
- Non-Caucasian race/ethnicity – Hispanic/Latino, African American, American Indian
- Pre-diabetes
- Hypertension
- Sedentary lifestyle
- Overweight (Body Mass Index [BMI] › 25.0 kg/m2) or obese (BMI › 30.0 kg/m2)

Of those Americans who are diagnosed with diabetes, 90-95% have type 2 diabetes.

Pre-Diabetes

Pre-diabetes is a condition that occurs when a person's blood sugar levels are higher than normal but not high enough for a diagnosis of type 2 diabetes. Most people with pre-diabetes eventually develop type 2 diabetes. However, studies have shown that people with pre-diabetes can prevent or delay the onset of type 2 diabetes through modest weight loss, healthy diet and regular exercise. The risk factors for pre-diabetes are the same as the risk factors for type 2 diabetes.

Gestational Diabetes

Gestational diabetes develops in some women during pregnancy and usually disappears when the pregnancy is over. Obesity is associated with a higher risk of developing gestational diabetes. Women who have gestational diabetes are more likely to develop type 2 diabetes later in life. Healthy eating habits and physical activity can help lower blood sugar levels, however insulin may still be required.

Signs and Symptoms

A person can have diabetes for years without experiencing any symptoms. Some of the most common symptoms of diabetes include:

- Excessive thirst
- Extreme hunger
- Frequent urination

- Unusual weight loss
- Increased fatigue
- Irritability
- Blurred vision
- Slow healing cuts or sores

Complications

Uncontrolled diabetes can lead to serious complications and even death. (National facts and figures. Center for Disease Control and Prevention)

Heart Disease and Stroke

- Heart disease and stroke account for about 65% of deaths in people with diabetes.
- Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes.
- The risk of stroke is 2 to 4 times higher for those with diabetes.

High Blood Pressure

- About 73% of adults with diabetes have blood pressure > 130/80 or use prescription medications for hypertension.

Eye Disease

- Diabetes is the leading cause of new cases of blindness among adults.
- In people who have diabetes, retinopathy causes 12,000 to 24,000 new cases of blindness each year.

Kidney Disease

- Diabetes is the leading cause of kidney failure in the United States.
- About 10%-40% of people with type 2 diabetes eventually will suffer from kidney failure.

Flu and Pneumonia

- People with diabetes are more susceptible to many other illnesses and, once they acquire these illnesses, often have worse prognoses. For example, they are more likely to die with flu or pneumonia than people who do not have diabetes.

Nervous System Disease

About 60%-70% of people with diabetes have mild to severe forms of nervous system damage including:

- o Impaired sensation to pain in the feet or hands
- o Slowed digestion of food
- o Carpal tunnel syndrome

- Severe forms of diabetic nerve disease are a major contributing cause of lower-extremity amputations.

Amputations

- More than half of lower limb amputations in the United States occur among people with diabetes.

(Source: Centers for Disease Control and Prevention, Division of Diabetes Translation, National Diabetes Fact Sheet, 2005)

Appendix D

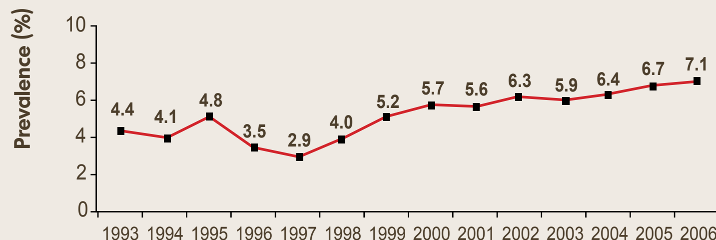
National Public Health Goals

Diabetes is common, complex and costly.

Diabetes is a Common Problem

In Kansas, it is estimated that nearly 216,000 adults have diabetes – 151,000 Kansans with diabetes that have been diagnosed and 65,000 with diabetes who have not been diagnosed. From 1992 to 2006, the prevalence increased by an alarming 58% (Figure 1).

Figure 1 ***Age-Adjusted Prevalence of Diabetes in Adults, Kansas 1992-2006***

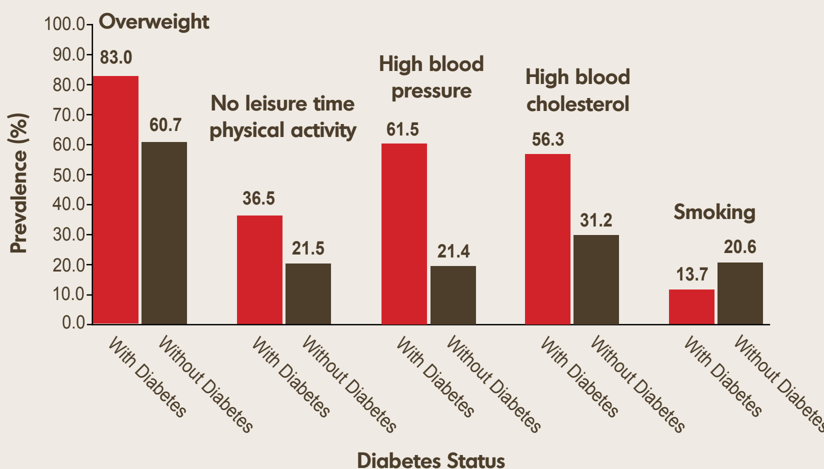


Source 2006 Kansas BRFSS. Age-adjusted to 2000 U.S. standard population.

Diabetes is a Complex Problem

The risk factors associated with diabetes contribute to the complex nature of this disease. Adult Kansans diagnosed with diabetes face complications that disproportionately affect them compared to adult Kansans who don't have diabetes (Figure 2). Higher prevalence of certain risk factors among adults with diabetes increases the risk of complications. Adult Kansans with diabetes have a higher prevalence of being overweight and obese, lacking physical activity, high blood pressure and high blood cholesterol. Fortunately, there were fewer Kansans with diabetes who were current smokers compared to Kansans without diabetes.

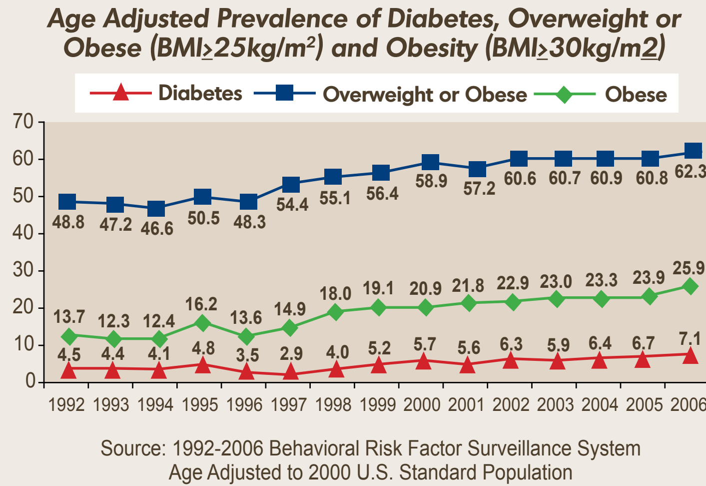
Figure 2 ***Prevalence of Adults With and Without Diabetes that Reported Being Overweight, No Leisure Time Physical Activity, High Blood Pressure, High Blood Cholesterol and Smoking, Kansas 2006***



Source: 2005-2006 Kansas Behavioral Risk Factor Surveillance System
Overweight is defined as BMI >= 25 kg/m2
Data for high blood pressure and high blood cholesterol are from 2005 Kansas BRFSS

Kansans in general are at risk for developing diabetes. There is a strong correlation between obesity and the onset of type 2 diabetes. During the last ten years, an increase in the number of Kansans with diagnosed diabetes has paralleled the increase in the number Kansans who are overweight and/or obese (Figure 3).

Figure 3

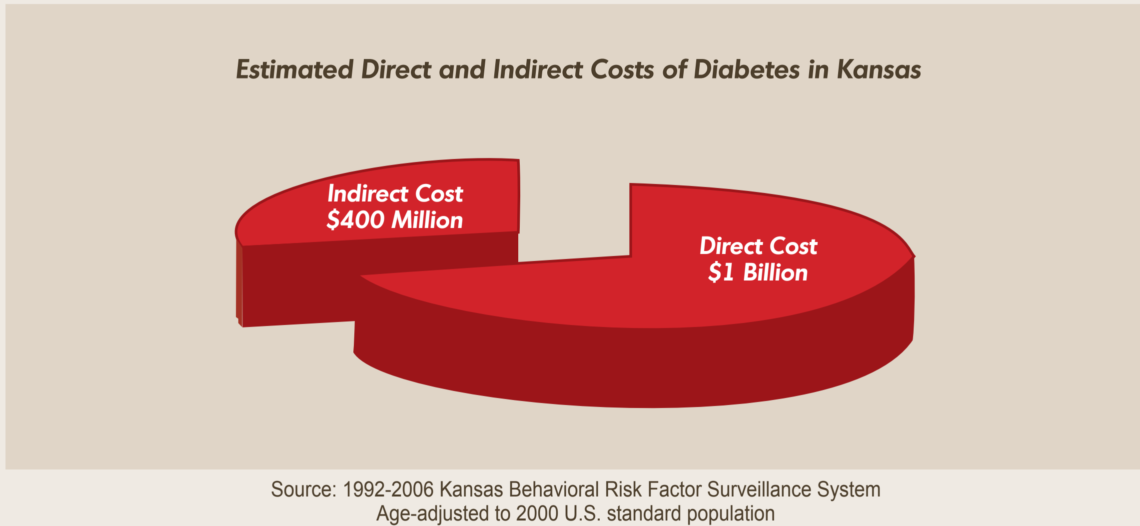


Source: 1992-2006 Behavioral Risk Factor Surveillance System
Age Adjusted to 2000 U.S. Standard Population

Diabetes is a Costly Problem

In 2004, the direct and indirect cost of diabetes was estimated at a staggering $1.4 billion (Figure 4). Nearly half (49.3%) of the total cost of care for diabetes was paid by Medicaid, Medicare (21.4%) and other public funds (17.6%). Private insurance paid one-third (34.5%) of the total expenses for diabetes care.

Figure 4



Source: 1992-2006 Kansas Behavioral Risk Factor Surveillance System
Age-adjusted to 2000 U.S. standard population

Appendix E

Primary Prevention of Diabetes in Kansas:
ACTION PLAN BLUEPRINT

Essential Public Health Services	Recommendations	Recommendation
		Monitor Health Status to Identify Health Problems and Goals
Essential Public Health Services	Recommendations – Priorities	1. Prepare annual Kansas state surveillance report based on yearly BRFSS data related to diabetes disease burden and its risk factors (lack of physical activity, unhealthy dietary habits, obesity, and smoking). *(Widespread communication of above mentioned report by developing user-friendly online system.)*
Essential Public Health Services	Recommendations – Priorities	2. Partner with related professional associations (e.g., KS Optometry, KS Podiatry, Kansas Association for the Medically Underserved (KAMU)) to identify people at risk and associated health problems.
Essential Public Health Services	Recommendations – Priorities	3. Develop a Medical Advisory Board for Diabetes.
Essential Public Health Services	Recommendations – Priorities	4. Use mass media to create demand for self-assessment tool (e.g., "Ask your doctor if you're at risk for diabetes").
Essential Public Health Services	Recommendations	5. Develop the ability to monitor overweight in schools.
Essential Public Health Services	Recommendations	6. Use databases of people screened through related associations (e.g., National Kidney Foundation).
Essential Public Health Services	Recommendations	7. Promote statewide use of American Diabetes Association (ADA) self-assessment tool.
Essential Public Health Services	Recommendations	8. Use Behavioral Risk Factor Surveillance Survey (BRFSS), Youth Risk Behavior Survey (YRBS), Youth Tobacco Survey (YTS), existing Women, Infant, and Children (WIC) data, and pre-natal assessments from the Department of Social and Rehabilitation Services (SRS) to identify people at risk.
Essential Public Health Services	Recommendations	9. Develop the ability to monitor pre-diabetes (Impaired Glucose Tolerance) for all Kansans.
Essential Public Health Services	Recommendations	10. Develop a plan for an Obesity Registry (e.g., those who have achieved significant weight loss and have maintained it) to assist planning for obesity efforts.
Essential Public Health Services		**Diagnose and Investigate Health Problems and Health Hazards**
Essential Public Health Services	Recommendations – Priorities	1. Enhance communication and consultation between state and local health departments to use diabetes surveillance reports to assess burden of disease and its risk factors at the local level (e.g., BRFSS, YRBS, YTS).
Essential Public Health Services	Recommendations – Priorities	2. Develop a mechanism to disseminate diabetes surveillance information from local health department level to local community organizations.
Essential Public Health Services	Recommendations – Priorities	3. Develop a mechanism to help local health departments and community organizations to understand the extent of diabetes related problems in their particular areas.
Essential Public Health Services	Recommendations	4. Develop Diabetes Risk Registry.
Essential Public Health Services	Recommendations	5. Foster student advocacy and support groups around diabetes risk factors.
Essential Public Health Services	Recommendations	6. Promote assessments of local access to parks and walking trails.
Essential Public Health Services	Recommendations	7. Investigate the problem at the local level with the help of special surveys (over sampling in local places).
Essential Public Health Services	Recommendations	8. Prepare maps of environmental hazards (e.g., vending machines in schools, "walkability" access) related to risk factors.

Essential Public Health Services

Inform, Educate, and Empower People about Health Issues

Recommendations		
Priorities	1.	Disseminate diabetes risk information to policy makers.
Priorities	2.	Health Education Plan *Provide health education materials to communities*
Priorities	3.	Create culturally appropriate education provided by credible sources (e.g., Promotoras)
Priorities	4.	Promote existing guidelines for prevention and treatment of overweight and obesity (e.g., National Heart Lung Blood Institute, ADA)
Priorities	5.	Identify dedicated health promotion (state) funding for diabetes and other chronic diseases.
	6.	Develop media campaigns regarding diabetes, its risk factors, and primary prevention strategies.
	7.	Establish an on-line information system related to diabetes and its risk factors, the extent and importance of the issues, strategies to deal with the issues, contact information of the resources and the community based programs available to help in dealing with diabetes and its risk factors at individual and community levels.
	8.	Educate providers to encourage them to counsel patients to be active and eat healthy diets.
	9.	Develop and maintain a service map identifying what services are available at the county level.
	10.	Use mass media to create demand for self-assessment tools (e.g., "Ask your doctor if you're at risk for diabetes").
	11.	Utilize Quitline to support smoking cessation.
	12.	Provide communications that make the case for funding for health issues (e.g., health prevention versus funding for roads).
	13.	Promote on-line access to diabetes related information at workplaces, businesses and schools.
	14.	Support local speakers bureau related to risk for diabetes (e.g., model slide presentations with consistent messages).
	15.	Provide model negotiation strategies and contracts with vendors to promote/provide healthy choices (e.g., soda machines, fast food restaurants).
	16.	Collaborate with celebrities in promoting health activities.

Mobilizing and Supporting Community Partnerships to Identify and Address Health Problems and Goals

Recommendations		
Priorities	1.	Facilitate planning, implementation and evaluation of nutrition, physical activity, tobacco control and obesity control programs using evidence-based strategies by local health, community organizations, work places, and school administrations.
Priorities	2.	Enhance physical environment to promote physical activity (e.g., hiking trails, parks, river access).
Priorities	3.	Support local coalitions (e.g., develop set of tools such as tips, best and promising practices) for local change efforts.
	4.	Promote opportunities for local communities for capacity building, leadership development and skills training for developing effective partnerships with various organizations.
	5.	Expand regional outreach capacity to help local health and community organizations to identify agencies providing technical and financial support, and to develop relationships with those agencies.
	6.	Develop a system to provide planning and implementing grants to local communities for primary prevention plans.
	7.	Build ownership for this work among city/county level administrators (e.g., request to be on the city/county commissioners and administrative planning agendas).
	8.	Link increase in state funding formula funds with health promotion and chronic disease risk activities in local communities.

Develop Policies and Plans that Support Individual and Community Health Efforts

Essential Public Health Services	Recommendations	Priorities	1. Promote practice of evidence-based disease prevention and management strategies by health care providers.
			2. Promote clean indoor air policy development and system changes at work sites, schools and public places.
			3. Provide a reimbursement code for screening and other clinical preventive services for obesity.
			4. Create opportunities to increase physical activity.
			5. Develop policies requiring physical education in the context of coordinated school health that meets defined standards in all Kansas schools.
			6. Develop policy to address the lack of availability of affordable fruits & vegetables *(Work with juice/fruit companies for subsidies to school athletic departments. Subsidize fruit & vegetable growers through farmers' markets and roadside stands or grocery stores.*
			7. Develop strategies to provide incentives for employees to participate in physical activity, nutrition, weight reduction, and smoking cessation programs provided by employers.
			8. Promote provision of healthy eating choices at restaurants.
			9. Modify policies so that all who need important clinical preventive services get them.
			10. Develop policies and system changes regarding provision of safe public places for engaging community members in physical activities.
			11. Promote legislative action to increase Medicaid reimbursements (e.g., diagnosis for obesity, diabetes related services).
			12. Support tax incentives for businesses for employee fitness efforts.
			13. Identify and disseminate model ordinances (e.g., require developers to include sidewalks in development, etc.).
			14. Promote development of an appropriate reimbursement communication/consultation for preventive services by Medicaid and third party reimbursement systems.
			15. Develop policies to: • *Remove physical activity barriers* • *Support environmental change*
			16. Capitalize efforts on land use efforts to promote physical activity (e.g., hiking trails, river access).
			17. Provide tax credits for school districts that restrict access to unhealthy dietary choices (e.g., soda and ala carte vending machines) and promote healthy alternatives (e.g., fruits, vegetables).
			18. Promote business policies that relate to point of purchase to promote healthy choices (e.g., check-out stand options).
			19. Promote provision of tax credits or insurance breaks for those enrolled in organizational weight loss management (e.g., fitness club memberships, Weight Watchers).
			20. Promote tax credits for those assuring access to health foods (e.g., food pantries).

Essential Public Health Services

Enforce Laws and Regulations that Protect Health and Ensure Safety

Recommendations

Priorities:

1. Enforce laws and regulations against selling tobacco products to children and adolescents.
2. Review existing laws and regulations related to prevention of diabetes.
3. Develop a plan for addressing the gaps between existing laws and regulations and identified policy goals.
4. Compare existing laws and regulations to policy goals identified in essential service #5.
5. Assess compliance with school policies that protect and promote health (e.g., physical activity).

Other recommendations:

6. Collect sales tax on "unhealthy products" (e.g., soft drinks, super-sized high-fat meals) and redistribute for prevention efforts in "health opportunity zones" (e.g., areas where there are high levels of diabetes).

Assuring Access and Linking People to Needed Services

Recommendations

Priorities:

1. Arrange food distribution programs (e.g., WIC, homeless food programs) that are healthy and culturally appropriate.
2. Partner with existing associations/organizations (e.g., National Kidney Foundation, Parish Nurses) to prompt follow-up for those identified to be at risk for diabetes through screening activities.
3. Promote development of parks, walking trails, bike trails, and other safe places assuring access for physical activity programs (e.g., after school programs, Parks and Recreation, YMCA, YWCA).
4. Engage corporate sponsors in providing free materials promoting health habits.
5. Maintain and enhance neighborhood schools as a resource for healthy habits (e.g., playgrounds, afterschool activities, parental participation)
6. Assure access to services for all through expanded health insurance coverage (e.g., nutrition and physical activity coverage, obesity coverage, screening service coverage).
7. Prepare asset maps of providers who will assure/provide prevention services.
8. Enhance cultural and linguistic competence (e.g., training courses, workshops) and language access (e.g., interpreters).

Other recommendations:

9. Promote local review of public transportation and enhance collaboration of access to health services.
10. Link diverse groups of people to available supports for a healthier diet and appropriate physical activity (e.g., farmers' markets).

Assure a Competent Public and Personal Health Care Workforce

Recommendations

Priorities:

1. Provide ongoing training to staff members of participating partner agencies/organizations involved in providing diabetes prevention services (e.g., health service providers who provide clinical preventive screening, school health educators).
2. Enhance cultural competence through training and certification programs (e.g., workshops, courses).
3. Enhance core competencies in bringing about community system changes through training and certification programs.
4. Provide certification and advancement opportunities for those demonstrating enhanced core competencies (e.g., medical licensing exams).

Other recommendations:

5. Enhance outreach capacity for mobilizing local support for diabetes surveillance.
6. Assure adequate local and regional staff to ensure provision of needed services (e.g., public health nurses, Kansas State Department of Education, Kansas Department on Aging, school nurses).
7. Develop communication /consultation to document competencies.

Essential Public Health Services		
Evaluate, Accessibility, and Quality of Personal and Population-Based Health Services		
Recommendations	Priorities	1. Monitor and promote quality clinical preventive services related to diabetes (e.g., assessment of clinical services provided by physicians) that meet current guidelines.
		2. Establish communication/consultations/technical support for health and community organizations for measuring progress and outcomes of the programs, as well as, interpretation and reporting of the process and outcome measures.
		3. Develop Diabetes Risk Registry to identify target population.
		4. Assure comparable measures across cities/counties.
		5. Evaluation based on community involvement. Assure capacity to evaluate outcomes of community-based interventions.
Research for New Insights and Innovative Solutions for Health Problems and Goals		
Recommendations	Priorities	1. Use data on the outcomes of the primary prevention program obtained by scientifically designed evaluation strategies for developing and investigating various research questions.
		2. Convene an annual conference for the purpose of educating the diabetes health community about primary prevention of diabetes.
		3. Conduct focus groups to determine what infrastructure is needed in the community to address primary prevention of diabetes.
		4. Convene work groups to develop interventions that will incorporate lessons learned from community focus groups.

Appendix F

Definition of Terms

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

Behavioral Risk Factor Survey (BRFSS) – The largest continuously conducted telephone survey in the world. The Centers for Disease Control and Prevention coordinates and provides funding for the BRFSS Survey. It is conducted annually in all 50 states, the District of Columbia and several territories. The survey includes questions about disease prevalence, risk factors, lifestyle and health behaviors. In Kansas, the survey has been conducted by the Kansas Department of Health and Environment since 1992.

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

Blood Glucose – The main sugar that the body makes from food we eat. Glucose is carried through the bloodstream to provide energy to all of the body's living cells. The cells cannot use glucose without the help of insulin. (Centers for Disease Control and Prevention. 2003. Take Charge of Your Diabetes, 3rd edition.)

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

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

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

Cultural Competency – culturally competent organizations design and implement services that are tailored or matched to the unique needs of individuals, children, families, organizations and communities served. (National Center for Cultural Competence)

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

Diabetes mellitus – A condition characterized by hyperglycemia resulting from the body's inability to use blood glucose for energy. In type 1 diabetes, the pancreas no longer makes insulin and therefore blood glucose cannot enter the cells to be used for energy. In type 2 diabetes, either the pancreas does not make enough insulin or the body is unable to use insulin correctly.

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

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

Dialysis – An artificial process for cleansing wastes from the blood – a job normally performed by the kidneys. However, in persons with kidney failure, this job must be accomplished through special equipment instead.

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

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

Healthy Kansans 2010 – The Kansas state health plan, vision, mission, goals, objectives, and priorities for the public health system partnership.

Healthy People 2010 – The prevention agenda for the nation. It is a statement of the national health objectives designed to identify the most significant preventable threats to health and to establish national goals to reduce these threats.

Hemoglobin A1C – A test that summarizes how much blood glucose has been sticking to the red blood cells during the past three to four months. Since red blood cells regenerate every four months, doctors can get a good idea about how glucose has affected the life of the cells during that time period.

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

Hypoglycemia – Also called low blood glucose. Is a condition that results when blood glucose levels are too low. Symptoms include feeling nervous or anxious, feeling numb in the arms and hands, and shakiness or dizziness.

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

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

Incidence – How often a disease occurs; the number of new cases of a disease among a certain group of people over a specific period of time.

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

Insulin resistance – A condition that occurs when the body cannot use the insulin it makes effectively and as a result, glucose levels rise.

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

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

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

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

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

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

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

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

Definitions adapted and/or excerpted from:

1) Centers for Disease Control and Prevention. (2002). Take Charge of Your Diabetes. 3rd edition. Atlanta: U.S. Department of Health and Human Services.
2) National Institute of Diabetes and Digestive and Kidney Diseases. Diabetes Dictionary. http://www.niddk.nih.gov/health/diabetes/pubs/dmdict/dmdict.htm

Appendix G

Resources

American Diabetes Association, http://www.diabetes.org

American Association of Diabetes Educators, http://www.aadenet.org

American Dietetic Association http://www.eatright.org

American Heart Association http://www.americanheart.org

Centers for Disease Control and Prevention, http://www.cdc.gov

Diabetes at Work, http://www.diabetesatwork.org

Healthy Kansans 2010, http://www.healthykansans.org

Healthy People 2010, http://www.healthypeople.gov

National Diabetes Education Program, http://www.ndep.nih.gov

National Diabetes Information Clearinghouse http://diabetes.niddk.nih.gov

National Institute of Diabetes and Digestive and Kidney Disease, http://www.niddk.gov

National Heart Lung and Blood Institute http://www.nhlbi.nih.gov/index.htm

National Kidney Foundation http://www.kidney.org

Kansas Department of Health and Environment, http://www.kdheks.gov

GREAT SEAL OF THE STATE OF KANSAS
JANUARY 29 1861

KANSAS DEPARTMENT OF
KDHE
HEALTH & ENVIRONMENT