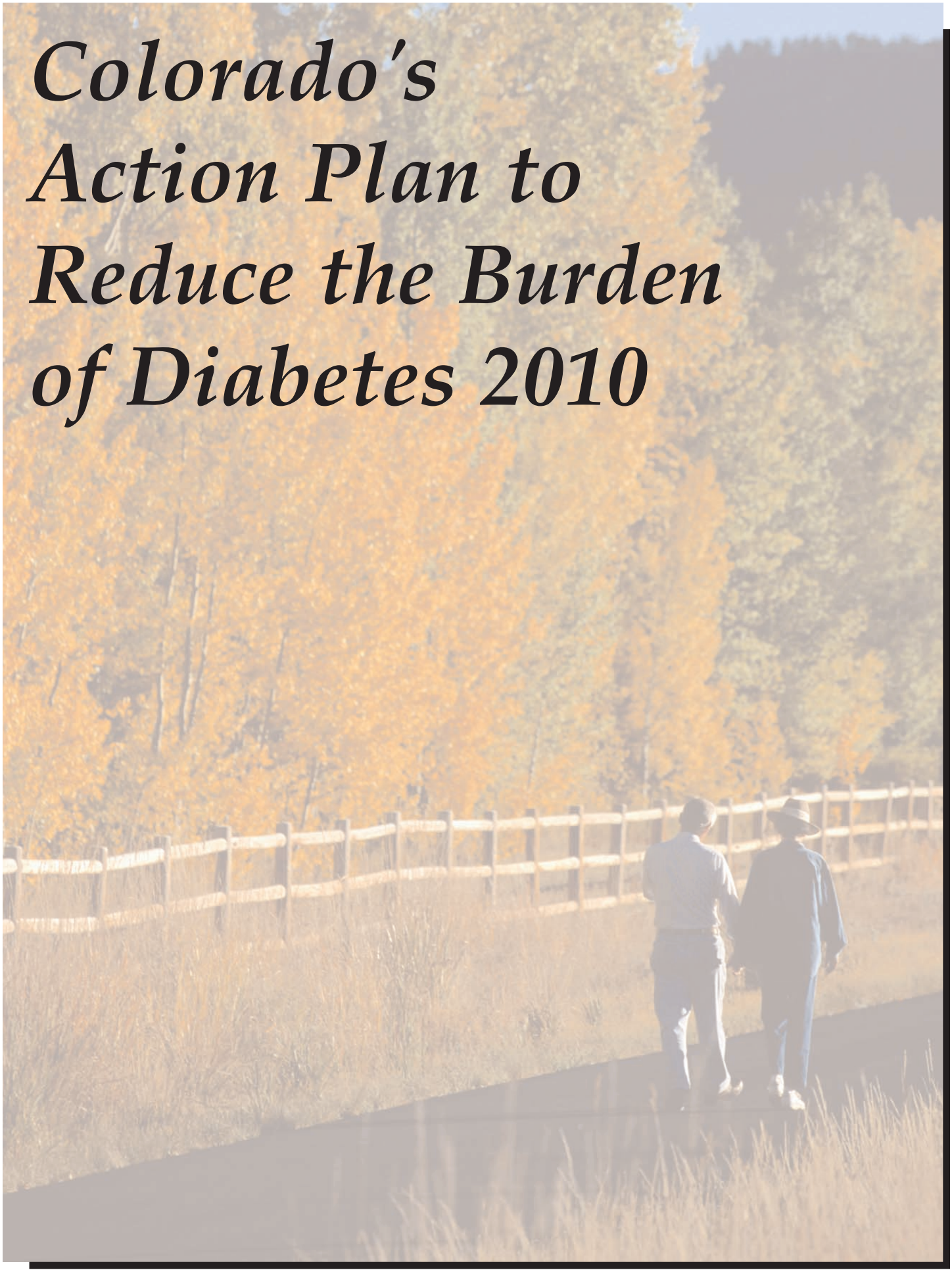
Colorado's Action Plan to Reduce the Burden of Diabetes 2010



"Dramatic new evidence signals the unfolding of a diabetes epidemic in the United States. With obesity on the rise, we can expect the sharp increase in diabetes rates to continue. Unless these dangerous trends are halted, the impact on our nation's health and medical care costs will be overwhelming."

Jeffrey P. Koplan, MD, MPH Director, Centers for Disease Control and Prevention, 1998-2002 From CDC At A Glance---Diabetes: Disabling, Deadly, and on the Rise 2002

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Preface - Letter

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Executive Summary

Diabetes is a priority public health problem in Colorado. Approximately 6.5percent or 247,300 adults in Colorado have diabetes and it is increasing rapidly in children. These increases have been observed in all segments of society. However, certain racial and ethnic groups suffer from diabetes and its complications more than others. African American and Latino Coloradans experience higher rates of diabetes than their white, non-Hispanic counterparts.

Uncontrolled diabetes results in a number of complications that lead to poor quality of life and a shortened lifespan. These include increased susceptibility to infections, eye disease, nerve damage, kidney failure, lower extremity amputations, and cardiovascular disease. Cardiovascular disease is the number one killer of persons with diabetes.

Almost 17 million people have diabetes.

Every week, 15,000 people learn they have diabetes.

Today, someone with diabetes will die of its complications.

Every day, 45 people with diabetes go blind.

Every hour, 8 people with diabetes must have a foot, ankle, or leg amputated to save their lives.

Frank Vinicor, MD, MPH
Director, Division of Diabetes Translation, CDC

Though diabetes is a very serious disease in Colorado, it can be controlled. With improved lifestyle behaviors we now know that diabetes onset can be delayed, and maybe prevented. With the use of currently available laboratory tests and exams, health care professionals can find diabetes complications early, and in many instances treat them before they have a chance to cause permanent damage. It is for this reason that this plan to reduce the unnecessary burden of diabetes and its complications was developed.

Members of the Colorado Diabetes Advisory Council and staff of the Colorado Diabetes Control Program developed the plan in 2002 to direct their efforts over the next eight years. Included in the plan are four overarching goals and ten objectives that correspond to the National Healthy People 2010 Objectives for Improving Health. The four goals of the Plan are:

All Coloradans at high risk for diabetes will know their risk factors for diabetes, will understand which strategies are effective for prevention or delay of the disease, and will be tested for diabetes according to recommended intervals;

All providers who care for Coloradans with diabetes will be current on strategies for diabetes prevention or delay, evidence-based diabetes care, and will have access to the resources and tools needed to provide that care;

All Coloradans with diabetes will have access to high quality medical care, self-management education, supplies, and medications to control their disease;

Colorado health care planners and policy makers will have access to all data needed to assess the status of diabetes prevalence, medical care, education, morbidity, and mortality in the state.

The following ten outcome objectives were designed to lead to improvements in the goals. The outcome objectives are:

By 2010, reduce the overall rate of diabetes that is clinically diagnosed in Colorado adults from 4.4 to 2.5 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who have ever received formal diabetes education from 60.3 in 2000 to 75 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who perform self-blood glucose monitoring at least once a day, from 50.1to 75 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who have a glycosylated hemoglobin measurement at least once a year from 79.9 to 90 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who have a dilated eye exam at least once a year from 67.3 to 75 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who have a foot exam at least once a year from 63.8 to 75 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease from 61.3 percent and 45.4 percent to 75 percent and 60 percent, respectively.

By 2010, increase the proportion of adult Coloradans with diabetes who have had their blood cholesterol checked within the past year from 85.8 to 95 percent.

By 2010, increase the proportion of adult Coloradans with diabetes who have had a dental exam in the past year from 59.0 to 75 percent.

By 2010, access to all known diabetes data sources for Colorado will be provided to interested individuals for program planning, monitoring, and evaluation.

Process objectives and action plans were developed to provide guidance to council members and program staff as they work together to improve diabetes outcomes in health care settings, the community, and worksites.

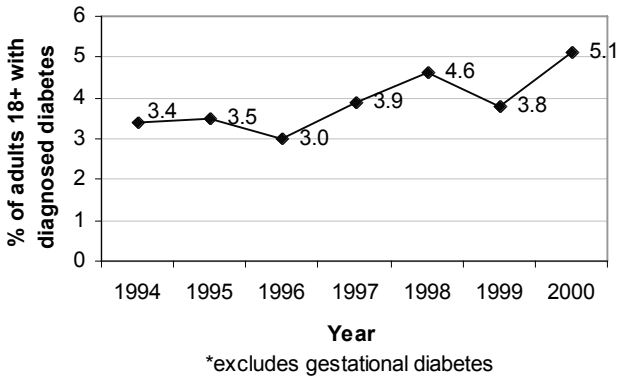
Work towards accomplishment of the objectives will be evaluated on an on-going basis.

Prevalence

The burden of diabetes in Colorado is hard to measure exactly, but is well characterized. Almost 167,000 persons are diagnosed with diabetes in Colorado and another 86,800 are likely to have the disease but do not know it. Behavioral Risk Factor Surveillance System (BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM) estimates indicate the prevalence of diagnosed diabetes in Colorado adults for 1997-2000 was 4.3 percent, with some variability within the state. National estimates indicate that the rate of undiagnosed diabetes is about one-third of the total prevalence. Using this estimate, the statewide prevalence of diagnosed and undiagnosed diabetes in adults was approximately 6.5 percent. Though recent state-specific prevalence data are not available for children, national estimates indicate that about .19 percent of children under the age of 20 have diabetes. Approximately one in every 400-500 children and adolescents has type 1 diabetes. Recent clinic-based reports and regional studies indicate that type 2 diabetes is becoming more common among American Indian, African American, and Hispanic/Latino children and adolescents.

Diabetes prevalence rates in the United States have increased dramatically since the mid-1930s. Colorado rates are similarly increasing. The number of persons with diagnosed diabetes in Colorado has increased by an estimated 48 percent since 1990 (Figure 1). This increase is partly due to an increasing prevalence of obesity, the aging of the population, and an increase in the Hispanic population that is at greater risk for diabetes.

Figure 1. Diagnosed diabetes* among Colorado adults: Colorado BRFSS 1994-2000



*excludes gestational diabetes

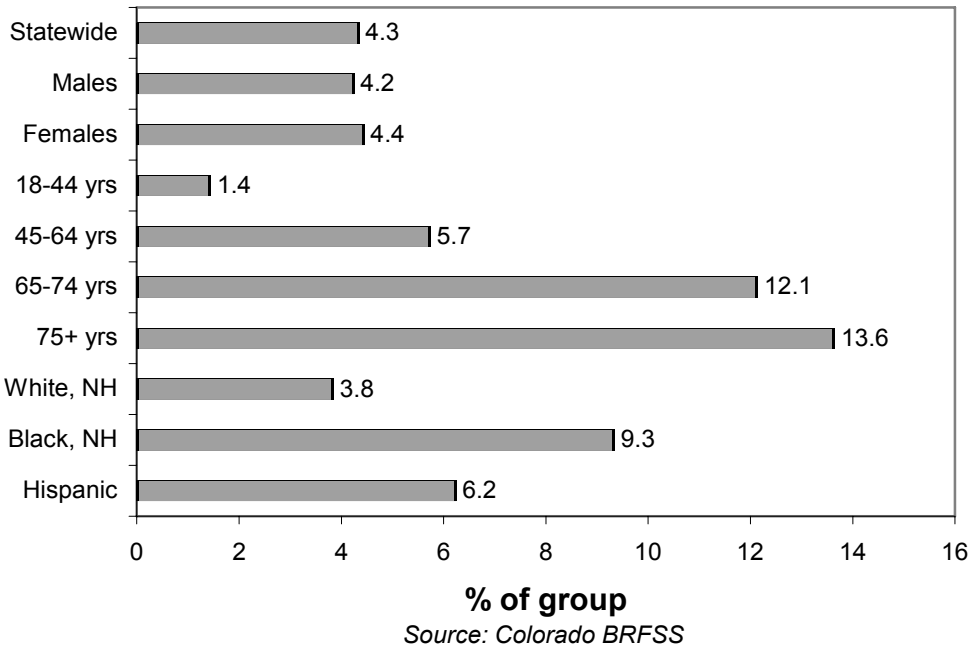
Diabetes prevalence increases with age. Data from the 1997-2000 Behavioral Risk Factor Surveillance System indicate that Coloradans aged 65 years or older were more than twice as likely to have been diagnosed with diabetes as persons aged 45 to 64 years (Figure 2).

These data also indicate that women are slightly more likely to have been diagnosed with diabetes than men.

Racial and ethnic sub-populations in the United States suffer from diabetes at disproportionately higher rates than the majority population. Colorado's 1997-2000 Behavioral Risk Factor Surveillance System data reveal that the distribution in the state is consistent with that of the United States. The prevalence of diagnosed diabetes among non-Hispanic whites was 3.8 percent, whereas the rate among Hispanics was 6.2 percent, and among African Americans 9.3 percent, more than twice the prevalence among whites.

The Behavioral Risk Factor Surveillance System data also show that as household income increased, the prevalence decreased.

Figure 2. Prevalence of Diagnosed Diabetes Among Select Groups, 1997-2000



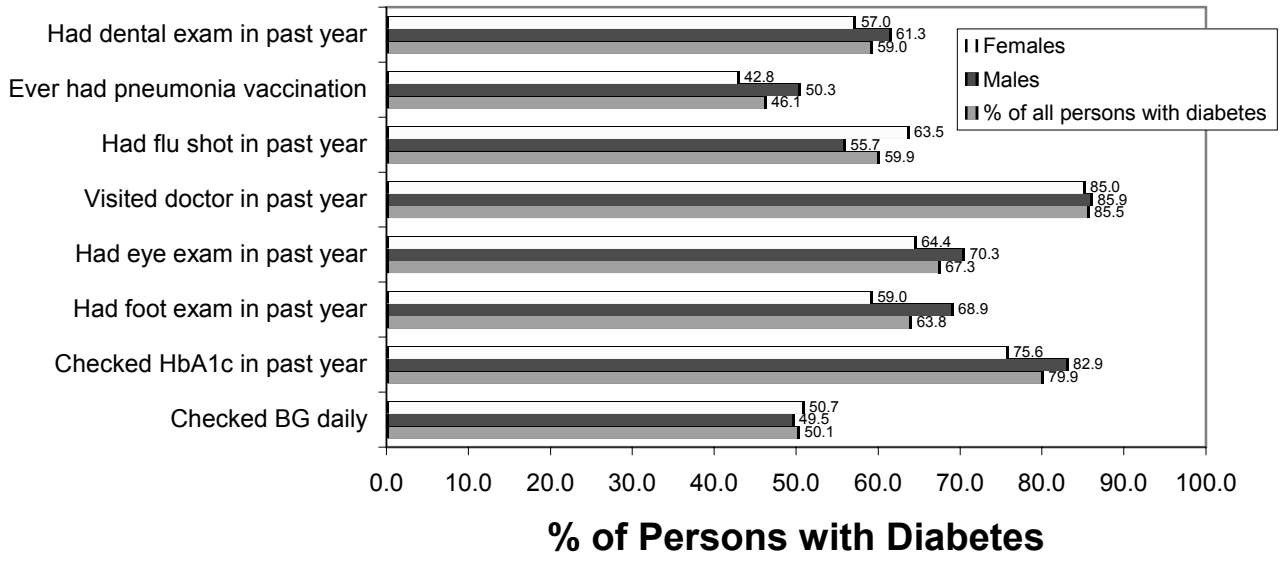
Source: Colorado BRFSS

Preventive Health Practices

Self-management of diabetes, combined with medical treatment for metabolic abnormalities, and early detection and treatment of complications, can alleviate the problems and lessen the severity of complications arising from the condition. Conversely, poorly managed diabetes increases the risk of complications from infectious diseases, periodontal disease, vascular complications, retinopathy, neuropathy and nephropathy. Data from the Behavioral Risk Factor Surveillance System diabetes module (Figure 3) provide an indication of the level of self-care, as well as medical care, that persons with diabetes receive. In the year 2000, 60.3 percent of adult Coloradans with diabetes reported having taken a class to learn how to manage their diabetes at some point in their lives, with 69.0 percent of urban residents and only 18.8 percent of rural residents reporting they had ever taken a class.

Self-monitoring of blood glucose is an important diabetes self-management skill and can be used as a proxy measure for overall diabetes self-care. Data from the Behavioral Risk Factor Surveillance System indicate that only 50.1 percent of Coloradans with diabetes reported checking their blood glucose at least once daily (1997-2000). Further, self-monitoring blood glucose can be an expensive proposition if one does not have health insurance to offset the cost. This is demonstrated by the rates of blood glucose monitoring among those who have health care coverage versus those who do not (51.7 percent and 34.4 percent respectively).

Figure 3. Preventive Health Practices Among Adults with Diabetes, 1997-2000



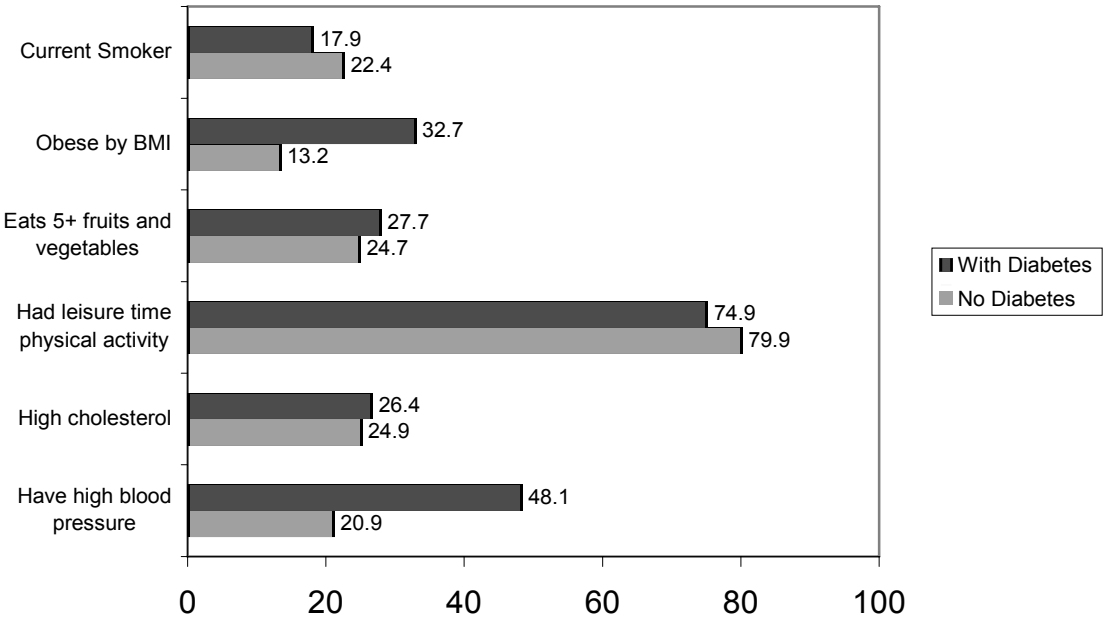
Source: Colorado BRFSS

Major studies have shown that diabetes complications can be prevented if the technology currently available is consistently used to find and treat early health problems before they lead to full blown complications. The 1997-2000 Behavioral Risk Factor Surveillance System data indicate that among adult Coloradans with diabetes: about 86 percent reported visiting a doctor in the past year for their diabetes; 79.9 percent reported they had their hemoglobin A1c checked in the past year; about 64 percent reported having a foot exam in the past year, with males being more likely than females to have had the exam (68.9 vs. 59.0 percent respectively); and that 67.3 percent reported having had a dilated eye exam in the past year, with the prevalence increasing with age. Influenza and pneumococcal vaccinations can prevent flu and pneumonia in persons with diabetes, who are at greater risk of death due to these infectious diseases than those without diabetes. Colorado Behavioral Risk Factor Surveillance System data indicate that females were more likely than males to have had an influenza shot in the past year (63.5 vs. 55.7 percent, respectively), though males were more likely to have ever had a pneumonia vaccination (50.3 vs. 42.8 percent, respectively).

Diabetes incurs, and is affected by, other serious health issues, notably hypertension and hyperlipidemia. Hypertension contributes to the development and progression of nephropathy, cerebrovascular disease, and cardiovascular disease. For the period 1997 to 2000, adults with diabetes were nearly 2.5 times more likely to report having high blood pressure than persons without diabetes (48.1 and 20.9 percent respectively, age-adjusted, Figure 4.)

The risk of cardiovascular disease can be mitigated by correcting hyperlipidemia and increasing levels of physical activity. According to the Behavioral Risk Factor Surveillance System, high blood cholesterol was similarly prevalent among those with and without diabetes (26.4 percent versus 24.9 percent, respectively) and adults with diabetes were somewhat less likely

Figure 4. Age-adjusted Prevalence of Select Health Behaviors Among Adults by Diabetes Status, 1997-2000



Source: Colorado BRFSS

to report any leisure time physical activity in the past month. However, respondents with diabetes were almost 2.5 times more likely to be obese by body mass index (32.7 percent) as persons without diabetes (13.2 percent).

People with diabetes get periodontal disease more often than people who do not have the disease. Gum infections can make it hard to control blood sugar, and once an infection starts, it can take longer to heal. Colorado Behavioral Risk Factor Surveillance System data indicate that adults with diabetes are more likely to suffer tooth loss (68.2 percent) compared to 47.8 percent in those without diabetes. Good blood sugar control and regular dental exams are the best defense against periodontal disease.

Tobacco use can exacerbate the vascular complications of diabetes. Fortunately, Colorado adults with diabetes are less likely than those without diabetes to be current smokers (17.9 percent versus 22.4 percent).

Morbidity

Serious health complications can arise from diabetes if it is not well controlled. The major complications of diabetes include blindness, cardiovascular disease, kidney failure, and lower extremity amputations.

Between 1996 and 2000, there were almost 50,000 hospitalizations of Coloradans with diabetes. The majority of these hospitalizations (9,783) were for major cardiovascular disease. The second leading cause of hospitalizations in persons with diabetes was acute hyperglycemic complications (1,706), and the third cause was lower extremity amputations (613). The remaining hospitalizations to persons with diabetes are attributed to a variety of causes and are grouped together in the category "any mention" (Table 1).

For the purposes of comparison, hospital discharge data can be defined as rates (per 10,000 residents). Defining the data in this manner yields a rate of 25.6 per 10,000 for cardiovascular disease with diabetes as a contributing factor, 3.5 per 10,000 for diabetes-related stroke, and 1.6 hospitalizations per 10,000 for diabetes-related lower extremity amputations.

Kidney failure due to diabetes is not accurately measured through hospital discharge data. However, data from the Intermountain End-Stage Renal Disease Network indicates that diabetes is the leading cause of kidney failure in Colorado. The Intermountain ESRD Network reports that in 1999 there were 357 new cases of ESRD due to diabetes in Colorado.

Statewide data on blindness due to diabetes are not available in Colorado. However, national data indicate that an estimated 200 Coloradans with diabetes will go blind each year.

Table 1. Number of Colorado Hospitalizations due to Diabetes, 1996–2000

Lower Extremity Amputations	613
Acute Hyperglycemic Complications	1706
Major Cardiovascular Disease	9,783
Any mention	37,160

Source: Colorado Hospital Discharge Data, 1996-2000

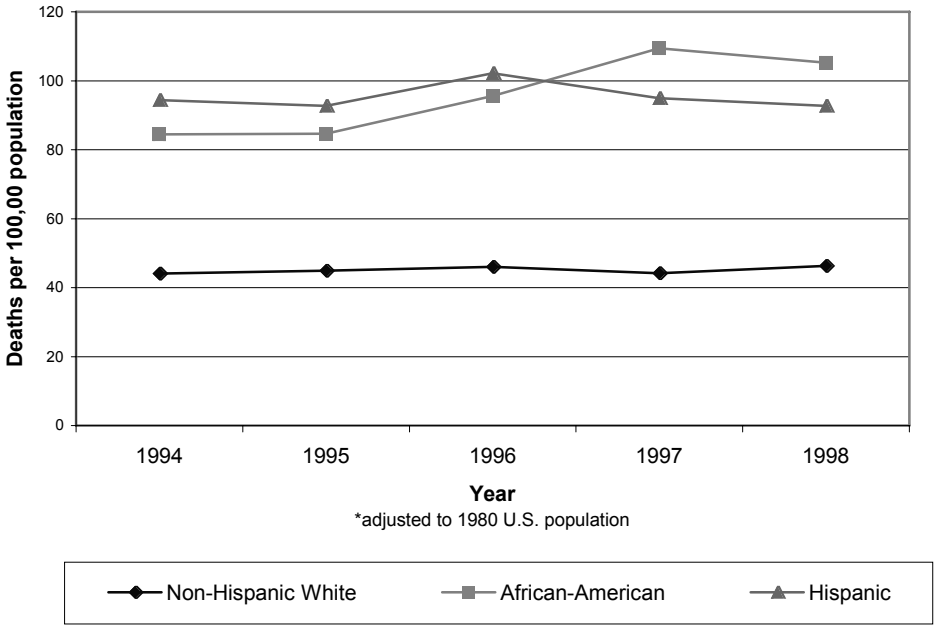
Mortality

Diabetes ranks as the 8th leading cause of death by disease in Colorado with over 1800 deaths due to diabetes (any cause) per year. Overall, diabetes contributed to 50.8 deaths per 10,000 persons, on average, for 1994 to 1998. In 1999, the rate for diabetes as the primary cause of death was 2.0 per 10,000. However, it should be kept in mind that because people die of the complications of diabetes, rather than the disease itself, diabetes is underreported as the underlying or contributing cause of death.
Colorado vital records data indicate that males were slightly more likely to die from diabetes as the primary cause than females in 1999 (21.5 per 100,000 versus 18.6 per 100,000, age-adjusted, respectively).

As stated previously, racial and ethnic minorities have greater diabetes prevalence rates than whites. Accordingly, these groups also have higher death rates due to diabetes than do whites. In 1999, African Americans and Hispanics had more than twice the rate for diabetes as the primary cause of death than non-Hispanic whites (43.6 and 37.7 versus 17.3 per 100,000, age-adjusted, respectively, Figure 5).

Persons with diabetes also die at an earlier age than their non-diabetic counterparts. Analysis of 1994-1998 Colorado vital records data indicates that diabetes caused the loss of about 112 to 126 years of productive life to age 65 for every 100,000 Colorado residents per year. Males lost a greater number of years of productive life to age 65 than females due to higher mortality rates early in life (140.2 vs. 95.5 per 100,000).

Figure 5. Age-adjusted Diabetes Related Mortality Rates by Race/Ethnicity: Colorado Residents, 1994-1998



Costs

The economic impact of diabetes is enormous. A study by the American Diabetes Association estimated direct medical costs (medical care) in 1997 at $44.1 billion and indirect costs (lost productivity and premature mortality) at $54.1 billion, totaling over $98 billion in the United States. These combined costs in Colorado were estimated at $1.4 billion in 1997.

The current state of diabetes in Colorado can be summarized as: increasing prevalence; continuing disparities in care, management, morbidity, and mortality; and increasing costs and demands on the health care system.

In the summer of 1990, through the encouragement of the Colorado Department of Health and Environment's Diabetes Control Program, and leaders in the diabetes care community, the Colorado State Board of Health created and appointed the Colorado Diabetes Advisory Council. The charge of the Council was to 1) define the problems of diabetes care in Colorado, and 2) propose solutions to these problems, incorporating collaboration among entities that provide services to persons with diabetes in the state.

> *The charge of the Diabetes Advisory Council is to define the problems of diabetes care in Colorado and to propose solutions to these problems, incorporating collaboration among entities that provide services to persons with diabetes in the state.*

The mission of the Council states that "The Colorado Diabetes Advisory Council is dedicated to acting in concert with statewide partners to prevent the development of diabetes, as well as death and disability due to diabetes, through statewide diabetes awareness, enhanced health care partnerships, and community involvement."

In collaboration with the staff of the Colorado Diabetes Control Program, the Council identified major problems created by diabetes for Colorado citizens and developed a plan to address those problems. In September 1992, the Colorado Diabetes Advisory Council published the report, "Diabetes in Colorado: Approaching the Year 2000". The 2000 plan set forth health status outcomes for Colorado based on the United States Department of Health and Human Services' document, "Healthy People 2000: National Health Promotion and Disease Prevention Objectives (DHHS Publ. No. 91-50212). Specific objectives were developed in four areas:

- Access to Care,
- Acute Complications,
- Chronic Complications, and
- Pregnancy.

Progress in achieving the 2000 objectives was reported in the 1997 publication, "Diabetes in Colorado: Approaching the Year 2000 Midcourse Review".

The Diabetes Advisory Council reconvened in February 2002 to begin the development of the Diabetes in Colorado plan for 2010.

The purpose of the plan was defined and a vision statement, comprised of four elements, was developed.

New outcome objectives were developed for the 2010 plan based on the vision statement, the United States Department of Health and Human Services' "Healthy People 2010" diabetes objectives, progress made in the original plan for 2000, new science in the care and control of diabetes published since 1992, and current data on the state of diabetes care and control in Colorado.

Task forces were formed to develop process objectives and recommended activities to address each component of the vision statement. The four task forces are:

- Public Awareness,
- Provider Education,
- Access to Diabetes Care and Education, and
- Data/Surveillance.

Diabetes Advisory Council members met over a period of six months to develop the recommendations and strategies outlined. The plans included in this document are purposefully general in nature. Advisory Council members will come together annually to develop and implement detailed work plans for each focus area.

The four focus areas, followed by objectives, recommendations, and action steps follow.

Purpose of the Plan

To provide a blueprint for the Diabetes Advisory Council, and other diabetes stakeholders in Colorado, to work together to reduce the burden of diabetes and improve the quality of life of all Coloradans affected by diabetes.

Goals of the Plan

The Advisory Council members developed a vision statement with four components that was translated into goals for the plan.

Goal 1

All Coloradans at high risk for diabetes will know their risk factors for diabetes, will understand which strategies are effective for prevention or delay of the disease, and will be tested for diabetes according to recommended intervals.

Goal 2

All providers who care for Coloradans with diabetes will be current on strategies for diabetes prevention or delay, evidence-based diabetes care, and will have access to the resources and tools needed to provide that care.

Goal 3

All Coloradans with diabetes will have access to high quality medical care, self-management education, supplies, and medications to control their disease.

Goal 4

Colorado health care planners and policy makers will have access to all data needed to assess the status of diabetes prevalence, medical care, education, morbidity, and mortality in the state.

> *"Much of the burden of diabetes could be prevented with early detection, improved delivery of care, and diabetes self-management education". Chronic Diseases and Their Risk Factors, the Nation's Leading Causes of Death, 1999.*

By 2010, reduce the overall rate of diabetes that is clinically diagnosed in Colorado adults from 4.3 to 2.5 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

By 2010, increase the proportion of adult Coloradans with diabetes who have ever received formal diabetes education from 60.3 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 2000.

By 2010, increase the proportion of adult Coloradans with diabetes who perform self-blood glucose monitoring at least once a day, from 50.1 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

By 2010, increase the proportion of adult Coloradans with diabetes who have a glycosylated hemoglobin measurement at least once a year from 79.9 to 90 percent.
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By 2010, increase the proportion of adult Coloradans with diabetes who have a foot exam at least once a year from 63.8 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

Opportunities for Prevention:

- *Over half of all amputations are preventable.*
- *Early detection and treatment can prevent 90percent of blindness.*
- *Diabetes-related kidney failure could be reduced by 50 percent.*

By 2010, increase the proportion of adult Coloradans with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease from 61.3 and 45.4percent to 75 and 60 percent, respectively.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997, 1999.

By 2010, increase the proportion of adult Coloradans with diabetes who have had their blood cholesterol checked within the past year from 85.8 to 95 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997,1999.

By 2010, increase the proportion of adult Coloradans with diabetes who have had a dental exam in the past year from 59.0 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

To impact the goals and objectives developed by the Colorado Diabetes Advisory Council, and achieve the vision developed, it is essential that work be done with many population groups and in multiple settings.

The target populations for this plan include high-risk segments of the public at large, health care professionals, persons with diabetes, and policy makers.

High-risk groups

Early diagnosis and aggressive treatment of diabetes can improve health outcomes. Approximately one-third of people who have diabetes do not know they have it and studies show that it may go undiagnosed for ten or more years. It is imperative that the public knows the risk factors, symptoms, potential complications and serious nature of the disease. Those at highest risk for developing diabetes must be informed, motivated and empowered to seek information and treatment.

The population groups listed below have been selected as the focus for diabetes public awareness interventions in Colorado due to their increased risk for developing diabetes and its complications:

- ➢ African Americans,
- ➢ American Indians,
- ➢ Hispanic/Latino Americans,
- ➢ Seniors, and
- ➢ Those with multiple risk factors

Healthcare professionals

Healthcare professionals are those who provide medical treatment and training for persons with diabetes. Interventions directed at healthcare professionals provide the opportunity to promote clinical standards of care and best practices for treating those with diabetes and working with those at risk. Health professionals are responsible for ensuring that persons with diabetes 1) understand how to care for themselves at home, 2) receive regular, timely tests to detect problems that diabetes may cause, and 3) provide treatment as needed. They also need to impart to individuals with diabetes a sense of the importance of diabetes self-management and care.

People with diabetes

Interventions can be directed to people with diabetes at all stages of the disease. Measures taken by the patient and health care providers can improve current health status and reduce risk for further problems. Persons with diabetes need to fully understand their treatment plan and how to implement it at home. They also need to understand the importance of personal responsibility for daily diabetes self-care and feel empowered to manage their chronic care.

Policy makers

Recognition and understanding of a community health problem is the first step in taking action to deal with the problem. Support by those in decision or policy-making positions within the community requires their knowledge and understanding of the needs of the community, medical and financial impact, and the benefits of programs and implementation strategies. The success of public health efforts depends on the ongoing involvement and proactive commitment of these community and organizational leaders.

The settings in which public health interventions take place are no longer limited to hospitals, medical offices, and public health clinics. To make an impact on the diabetes problem in Colorado we must consider alternative settings where people are receptive to diabetes messages, where diabetes care is provided, and where policy makers make decisions about our communities. These settings may include communities, health systems and worksites.

Communities

The term community can be used to describe a geographic region or a group of people - by age, gender, race, or ethnicity. For a group to be defined as a community, however, community identity with shared values and norms should be present. Unlike interventions that target the individual and take place in a health clinic or a health care professional's office, community-based programs can reach an entire population group.

Venues included in the community setting are public facilities; local government and agencies; and social service, faith and civic organizations that provide entrée to people where they live, work and play. These groups and organizations can be strong advocates for educational, policy, and environmental changes throughout the community.

When used in conjunction with targeted approaches, community-based interventions can increase the likelihood for success in improving personal and community health.

Unlike interventions that target the individual and take place in a health clinic or a health care professional's office, community-based programs can reach an entire population group.

Health systems

Health systems include the facilities, providers, third-party payers, and other systems that deliver diabetes care and education. Facilities include all settings where health care is provided such as clinics, hospitals, physicians' and educators' offices. Providers include physicians, nurses, dietitians, diabetes educators, pharmacists, behavioralists, and others who provide care directly to the patient.

Goals of interventions targeting health systems may be to improve reimbursement for diabetes care and education, improvements in the workflow of a physician's office, or the implementation of reminder systems to ensure timely patient follow up.

Worksites

Workers spend about a third of their day at the worksite and are a captive audience for educational activities.

The worksite provides the opportunity for a variety of interventions including awareness activities targeting high-risk workers, support groups and educational opportunities for workers affected by diabetes, and policy development as it relates to employer-sponsored health insurance policies.

PUBLIC AWARENESS

Goal

To improve the public's awareness of the risk factors for diabetes and the strategies to prevent or delay the onset of diabetes.

Rationale

The results of the Diabetes Prevention Program, released in 2002, have shown that the onset of type 2 diabetes can be delayed with improved eating habits and regular physical activity that results in moderate weight loss in those who are overweight. In 2000, 14.2 percent of Colorado adults were considered obese and 7.1percent of adolescents were overweight. Additionally, many Coloradans at risk for developing diabetes are either not aware of their personal risk to develop the disease or may believe that the development of diabetes cannot be prevented. Others may not be aware of the strategies to reduce their modifiable risk factors. The delay of diabetes onset will result in less secondary and tertiary complications, which will lead to improved quality of life, increased productivity, and reduced health care costs.

Outcome Objective 1 By 2010, reduce the overall rate of diabetes that is clinically diagnosed in Colorado adults from 4.3 percent to 2.5 percent.
Baseline: Colorado BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM data, 1997-2000.

Recommendation

Conduct culturally appropriate public awareness campaigns targeting groups at risk of developing diabetes.

Process Objective 1.1 By 2003, research and review baseline data on the level of diabetes awareness among high-risk groups in Colorado (e.g. African American, American Indian/Alaska Native, Asian American, Hispanic/Latino American, and seniors).

Action Steps

1. Collect reports of studies completed with high-risk groups in Colorado to characterize the level of diabetes awareness among the groups' members.
2. Review the research from the reports and synthesize the findings to develop specific objectives for each target group.

Process Objective 1.2 By 2004, use the findings developed in Objective #1 to develop mobile displays that can be loaned to agencies conducting awareness programs for high-risk groups in Colorado (e.g. African American, American Indian, Asian American, Hispanic/Latino American).

Action Steps

1. Review the data and findings from the qualitative research.
2. Design a display for each group and identify education materials to distribute with each display.
3. Test the display with members of each group for effectiveness.
4. Develop the display based on the results of the test.
5. Develop a loaner program for the display and materials.
6. Inform agencies that conduct awareness activities of the availability of the display and materials.

Process Objective 1.3 By 2005, develop a program to train community members to present diabetes information to individuals and groups within their communities and train at least 25 community members to use the materials.

Action Steps

1. Do a literature search to identify existing programs to train community health workers in diabetes. Review programs identified for appropriateness.
2. Based on the review of existing programs identified, decide to use an existing program or develop a new program for the trainings.
3. Plan and provide the training program.
4. Maintain a list of presentations made by trained community health workers.
5. Evaluate the effectiveness of the training program.

Process Objective 1.4 Between 2003 and 2009, conduct a multi-pronged campaign to promote diabetes awareness messages with one target audience each year.

Action Steps

1. Collect qualitative data from at least one high-risk community each year to determine appropriate messages and media channels to use to reach the target community with diabetes prevention information.
2. Identify and recruit respected spokespersons in each community who are credible sources of health information to assist with the campaigns.
3. Develop sample messages and materials for the specific community, using the qualitative information collected, with at least one high-risk community each year.
4. Test the messages and materials with the intended audiences. Revise and retest, as needed.
5. Conduct one campaign each year utilizing appropriate media channels and community outlets to reach the intended audiences.
6. Evaluate the effectiveness of each campaign to improve the awareness of the target populations.

Evaluation

The effectiveness of the awareness activities will be evaluated through the use of qualitative research to determine the reach of the campaigns, acceptance of the campaigns by the target audiences, and effectiveness of the messages and materials to improve awareness of the risk factors for the development of diabetes and the strategies to reduce one's risk.

Principle agencies responsible

Colorado Diabetes Control Program
Public Awareness Task Force of the Diabetes Advisory Council

Partners:

American Diabetes Association
Colorado Foundation for Medical Care
Colorado State University Extension Service
University of Colorado Health Sciences Center
Metro Denver Black Church Initiative
Denver Health and Hospitals Community Voices Program
Weld County Diabetes Coalition
Pueblo Network for Education and Awareness of Diabetes
Alamosa Diabetes Coalition
Pueblo Community Diabetes Project

Goal

To improve access for Coloradans with diabetes to the medical care, supplies, medicines, and education needed to adequately self-manage their disease.

Rationale

Access to care, resources, and education for people with diabetes is difficult, especially for certain populations in Colorado. Availability of appropriate resources and reimbursement is often restricted and unknown by providers and people with diabetes. Only 18.8percent of rural Colorado residents with diabetes have ever taken a diabetes education class, whereas 69.0percent of urban residents have received formal diabetes education. Improved access to diabetes self-management education will result in improved self-care by Coloradans with diabetes and more empowered health care consumers.

Outcome Objective 2 By 2010, increase the proportion of adult Coloradans with diabetes who have ever received formal diabetes education from 60.3 to 75 percent.
(Baseline: Colorado Behavioral Risk Factor Surveillance System data, 2000.)

Recommendations

Educate health care providers and the public about the effectiveness of diabetes self-management education to improve self-care. Provide healthcare providers and the public with lists of self-management diabetes education and training programs available to Coloradans with diabetes. Work with representatives of rural communities to increase the number of self-management education programs in rural Colorado.

Process Objective 2.1 By 2003, prepare and distribute a report on current access to diabetes self-management education including the type of education, the amount received, barriers, resources, and cost effectiveness.

Action Steps

1. Review available data (i.e. Behavioral Risk Factor Surveillance System 2001, community health center clinic data, Medicare data) to determine the proportion of Coloradans with diabetes who have received diabetes self-management education.
2. Review reports of qualitative research conducted with Hispanic/Latinos and African Americans by the REACH group, and others, that describe the problems these high-risk populations have accessing culturally appropriate medical care and diabetes self-management education.
3. If needed, collect additional qualitative data (focus groups or interview) on the problems with access to diabetes education, especially in minority populations.
4. Perform a literature review of the cost effectiveness of diabetes self-management education in preventing complications and the efficacy of diabetes educators as part of the provider care team.

Process Objective 2.2 By 2004, develop regional, and statewide, self-management education resource lists and distribute the lists to providers and the public using existing agencies (e.g. insurance carriers, physician offices, libraries, public health departments, CSU Cooperative Extension Agents, recreation centers, pharmaceutical field representatives, etc.).

Action Steps

1. Compile a complete resource list of diabetes self-management education offerings, by region and state, with contact information, cost and insurance coverage. Include the phone number of the Colorado Diabetes Control Program as a resource.

2. Include information on the benefits of participating in diabetes self-management training for the public.
3. Make a recommendation to the provider education task force to conduct a program on the cost-effectiveness of diabetes self-management education provided by diabetes educators and distribute the resource lists at the program(s).
4. Develop a plan for distribution of the self-management resource lists through traditional and electronic format.

Process Objective 2.3 By 2008, work with representatives of rural Colorado communities to increase the number of recognized diabetes self-management education programs serving rural Colorado residents from 7 to 12 programs. (Baseline: The American Diabetes Association website's list of recognized diabetes self-management education programs.)

Action Steps

1. Identify rural communities that lack self-management education programs.
2. Convene community representatives to assist with program development and establish a resource network for diabetes self-management support.
3. Design a collaborative delivery system with regularly scheduled self-management diabetes education programs for which no rural resident will need to travel more than 100-130 miles to reach the site of the education program.

Process Objective 2.4 By 2010, pilot at least one new, innovative method for funding diabetes self-management education.

Action Steps

1. Explore different and innovative methods to finance diabetes education.
2. Educate insurers and providers on cost-effective, evidence-based medical care fo persons with diabetes.
3. Report the outcomes of the task force to the public, the media and on the Colorado Diabetes Control Program's website.

Outcome Objective 3 By 2010, increase the proportion of adult Coloradans with diabetes who perform self-blood glucose monitoring at least once a day from 50.1 to 75percent. (Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.)

Recommendations

Train health care professionals to empower their patients with diabetes to improve their self-care. Improve availability of diabetes supplies to all Coloradans with diabetes, regardless of their ability to pay.

Process Objective 3.1 By 2004, prepare and distribute a report on current access to culturally appropriate diabetes care and supplies.

Action Steps

1. Review reports of qualitative research conducted with Hispanic/Latinos and African Americans by the REACH group, and others that describe the problems these high-risk populations have accessing culturally appropriate medical care.
2. If needed, collect additional data on the problems Coloradans face accessing culturally appropriate diabetes care and supplies, especially in minority populations.
3. Perform a literature review of the effectiveness of diabetes self-monitoring of blood glucose to promote diabetes control.

Process Objective 3.2 By 2006, develop materials on effective strategies to empower Coloradans with diabetes to self-manage their chronic disease and disseminate them to at least 500 health care professionals.

Action Steps

1. Conduct a literature search of evidence-based methods to improve self-management behaviors among people with diabetes, specifically related to self-monitoring of blood glucose.
2. Based on the literature review, develop materials to share with providers and diabetes educators that will improve their ability to empower patients to self-manage their diabetes.
3. Partner with the provider education task force, and other organizations, to disseminate the materials on empowering strategies to providers and diabetes educators.

Process Objective 3.3 By 2008, based upon the information gathered above, develop and implement at least one activity to improve access to diabetes care and/or supplies.

Action Steps will be developed when an activity is selected. Potential activities are listed below:

1. Revision of a brochure on insurance coverage for diabetes supplies and self-management education programs and distribution to pharmacies, physician offices, libraries, and senior centers.
2. Collaboration with diabetes equipment manufacturers to obtain low cost supplies for persons with diabetes who lack health insurance coverage.
3. Development of educational programs for diabetes educators to teach persons with diabetes how to interpret blood glucose monitoring results.
4. Development of a program to educate employers and insurers on cost-effective, evidence-based medical care for persons with diabetes.
5. Report the outcomes of the task force to the public, the media, and members of the state legislature, using the Colorado Diabetes Control Program's website and written communication methods.

Monitoring/evaluation

The proportion of Coloradans with diabetes who receive formal diabetes education and who perform self-monitoring of blood glucose at least daily will be monitored through the diabetes module of the Behavioral Risk Factor Surveillance System.

Surveys will be used to assess the effectiveness of the diabetes self-management education and training program lists to increase awareness and referral to the programs. The increase in the number of rural diabetes education programs with reimbursement of services will be monitored through direct contact with these programs.

The effectiveness of the training on patient empowerment will be measured through participant surveys.

Methods to improve access to diabetes supplies will be assessed through reports from diabetes equipment manufacturers regarding the numbers of supplies used.

Principle agencies responsible

Access to Care and Education Task Force of the Colorado Diabetes Advisory Council
American Diabetes Association
Colorado Diabetes Control Program
Rocky Mountain Association of Diabetes Educators

Partners

Colorado Business Group on Health
Colorado Community Health Network
Colorado Foundation for Medical Care
Colorado Minority Health Forum
Colorado Turning Point Initiative
Latin American Research and Service Agency
Diabetes Industry Field Representatives
Pueblo Diabetes Community Project
San Luis Valley Diabetes Coalition
Weld County Diabetes Coalition

Goal

To improve the overall quality of health care that Coloradans with diabetes receive in the primary health care system.

Rationale

The present health care systems are not set up to provide chronic care. Providers have difficulty keeping current on diabetes therapies and rapidly changing technology. Implementation of a system of care that regularly assesses disease control and adherence to the American Diabetes Association standards of care would help improve outcomes.

Outcome Objective 4 By 2010, increase the proportion of adult Coloradans with diabetes who have a glycosylated hemoglobin measurement at least once a year from 79.9 to 90 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 2000.

Outcome Objective 5 By 2010, increase the proportion of adult Coloradans with diabetes who have a dilated eye exam at least once a year from 67.3 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

Outcome Objective 6 By 2010, increase the proportion of adult Coloradans with diabetes who have a foot exam at least once a year from 63.8 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

Outcome Objective 7 By 2010, increase the proportion of adult Coloradans with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease from 59.9 and 46.1 percent to 75 and 50 percent, respectively.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997, 1999.

Outcome Objective 8 By 2010, increase the proportion of adult Coloradans with diabetes who have had their blood cholesterol checked within the past year from 85.8 to 95 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997,1999.

Outcome Objective 9 By 2010, increase the proportion of adult Coloradans with diabetes who have had a dental exam in the past year from 59.0 to 75 percent.
Baseline: Colorado Behavioral Risk Factor Surveillance System data, 1997-2000.

Recommendation

Distribute effective learning tools to health care providers to increase their knowledge, and use, of the standards of care for people with diabetes. Redesign the provision of diabetes care in the primary health care system in Colorado using the Chronic Care Model and Model for Improvement.

Process Objective 4-9.1 By 2004, develop and implement an intervention(s) to improve physician adherence to the diabetes standards of care.

Action steps

1. Partner with the Data/Surveillance Task Force to review data available (e.g. Behavioral Risk Factor Surveillance System, CFMC, CHC, etc.) to assess the quality of diabetes care currently provided in Colorado.

2. Perform a literature review to determine effective methods of impacting provider behavior.
3. Use the data from the literature review to select an intervention. Possible interventions include the following:
   a. Partnering with the Colorado Clinical Guidelines Collaborative to develop and disseminate revised diabetes guidelines.
   b. Partnering with insurance companies to develop provider incentives for following the guidelines.
   c. Partnering with the Colorado Medical Society to outreach to providers.

Process Objective 4-9.2 By 2004, coordinate a statewide diabetes collaborative, utilizing the Chronic Care Model and Model for Improvement, with at least five primary care clinics.

Action steps

1. Identify organizations within the state that are willing to partner in the implementation of the collaborative.
   a. Develop and execute a Memorandum of Agreement between the organizations to clarify roles and responsibilities.
   b. Identify funding and develop a budget for the collaborative.
2. Form a planning group that will include the following collaborative staff:
   a. Chair: expert in diabetes;
   b. Director: project management expert;
   c. Improvement advisor: expert in improvement theory;
   d. Coordinator: tracks the project and timeline; and
   e. System leader: visionary.
3. Form and convene an expert group/faculty to:
   a. Include collaborative chair and authorities in the topic;
   b. Identify team selection criteria;
   c. Select outcome measures;
   d. Plan learning session topics; and
   e. Consult with planning group.
4. Convene the planning group to:
   a. Select electronic data collection and an analysis system;
   b. Select a facility for the learning sessions;
   c. Develop marketing materials;
   d. Recruit clinics;
   e. Develop formats for reports;
   f. Develop pre-work handbook;
   g. Plan learning sessions (with faculty);
   h. Conduct learning sessions; and
   i. Develop and implement team support activities for the action periods (e.g. list serve, conference calls, site visits).

Monitoring/evaluation

Use data from the following sources to evaluate changes in the quality of health care provided in Colorado's primary health care system: Behavioral Risk Factor Surveillance System, Health Plan Employer Data Information Set, and primary care clinics participating in the Health Resources and Services Administration Collaborative. Conduct qualitative studies with patients and providers to evaluate the acceptability of the interventions.

Principle agencies responsible

Colorado Diabetes Control Program
Colorado Foundation for Medical Care

Partners

American Diabetes Association
American Dental Association
Colorado Business Group on Health
Colorado Clinical Guidelines Collaborative
Colorado Community Health Network
Colorado Medical Society
Diabetes Industry Companies
Pueblo Community Diabetes Project
San Luis Valley Diabetes Coalition
Weld County Diabetes Coalition

Goal

Colorado health care planners and policymakers will have access to all data needed to assess the status of diabetes prevalence, medical care, education, morbidity, and mortality in the state.

Rationale

Access to diabetes-related data will allow program planners and policy makers to make databased decisions.

Outcome Objective 10 By 2010, access to all known diabetes data sources for Colorado will be provided to interested individuals for program planning, monitoring, and evaluation.

Recommendation

Conduct assessments of all state-specific diabetes-related data sources which provide data for a specified population.

Process Objective 10.1 By 2002, complete an assessment of diabetes-related data sources available in the state to track prevalence, frequency of preventive exams for diabetes complications, health behaviors, utilization of education programs, morbidity, and mortality related to diabetes.

Action steps

1. Identify major sources of data needed and data owners.
2. Meet with data owners to collect information on the data set, including: population, indicators, date data collection began, frequency of assessment, variables, strengths, limitations, analysis details, availability of data.
3. Compile the information collected in a report.
4. Publish and distribute the report to the Diabetes Advisory Council members and others through the Diabetes Control program website.
5. Update the information every two years.

Process Objective 10.2 Between January 2003 and December 2010, collect, analyze, and report diabetes-related data from major sources.

Action steps

1. In 2003, and every three years thereafter, obtain Colorado Hospital Association hospital discharge data related to diabetes from the Health Statistics Section, write and publish a report.
2. In 2003, and annually thereafter, obtain Medicare data from CFMC, analyze the data and report the findings.
3. In 2003, and annually thereafter, obtain diabetes-related data from the community health centers participating in the Health Resources and Services Administration Diabetes Collaborative, analyze and report the findings.
4. In 2003, and annually thereafter, obtain HEDIS data from Colorado Health Plans, analyze and report the findings.
5. In 2003, and annually thereafter, obtain Behavioral Risk Factor Surveillance System diabetes module data from the Health Statistics Section, CDPHE, and report the results.

6. In 2004, and every three years thereafter, obtain Behavioral Risk Factor Surveillance System diabetes data, write and publish a trend report.
7. In 2004, and every three years thereafter, obtain data on end-stage renal disease in Colorado from the Intermountain ESRD Network #15, write and publish an End Stage Renal Disease Report.
8. In 2005, and every three years thereafter, obtain data on diabetes-related deaths from Vital Records, CDPHE, write and publish a diabetes mortality report.

Process Objective 9.3 By 2003, develop a system to collect data and report progress made on the outcome and process objectives set forth in this state plan.

Action steps

1. Develop project database to track objectives in the state plan.
2. Develop project database to track reports specified in Process Objective 10.2.
3. Monitor progress on objectives.
4. Publish report on successes and shortcomings, and evaluate system.

Monitoring/evaluation

Survey the council members for new data sources and on the usefulness of the current data source reference document. Collect council feedback on content and focus of Diabetes Control Program reports and usefulness of the reports in program planning, monitoring, and evaluation. Use the information collected to improve the reports.

Principle agencies responsible

Colorado Diabetes Control Program

Partners

Colorado Foundation for Medical Care
Colorado Community Health Network
Health Statistics Section, Colorado Department of Public Health and Environment
University of Colorado Health Sciences Center

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Healthy People 2010 Diabetes Objectives and Colorado Status

Prevalence

Objective #5-3. Reduce the overall rate of diabetes that is clinically diagnosed.			
Baseline US	US Target	Baseline CO	CO Target
4.0percent	2.5percent	4.3percent	2.5percent
7.4percent (AA)[1]		9.3percent (AA)	
6.1percent (H)[2]		6.2percent (H)	
3.8percent (Rural)		4.0percent (Rural)	
Data source: US data: 1997 NHIS[3]; Colorado data: 1997-2000 Colorado Behavioral Risk Factor Surveillance System			

Diagnosed Diabetes

Objective #5-4. Increase the proportion of adults with diabetes whose condition has been diagnosed.			
Baseline US	US Target	Baseline CO	CO Target
68percent of adults 20 years & older	80percent	68percent	80percent
Data source: 1988-1994 NHANES[1]			

Health Insurance

Obj #1: Increase the proportion of persons with diabetes who have health insurance.			
Baseline US (all persons)	US Target	Baseline CO	CO Target
83percent (1997)	100percent	91percent	100percent
Data source: US data: 1997 NHIS; Colorado data: Colorado Behavioral Risk Factor Surveillance System			

Self-Management Education

Objective #5-1: Increase the proportion of persons with diabetes who receive formal diabetes education.			
Baseline US	US Target	Baseline CO	CO Target
45percent (1998)	60percent	60.3percent	75percent
45percent (AA)		DNA[1] (AA)	
34percent(H)		63.6percent (H)	
37percent (Rural)		18.8percent (Rural)	
Data source: US data: 1998 NHIS; Colorado data: 2000 Colorado Behavioral Risk Factor Surveillance System			

[1] African American
[2] Hispanic
[3] National Health Interview Survey
[4] National Health and Nutrition Examination Survey
[5] Data not available

Self-Care

Obj #5-17: Increase the proportion of persons with diabetes who perform self-blood glucose monitoring at least once daily.			
Baseline US	US Target	Baseline CO	CO Target
42percent	60percent	50.1percent	75percent
40percent (AA)		DNA (AA)	
36percent (H)		49.7percent (H)	
DNA (Rural)		55.0percent(Rural)	
Data source: US data: 1998 US Behavioral Risk Factor Surveillance System; Colorado data: 1997-2000 Colorado Behavioral Risk Factor Surveillance System			

Preventive HealthCare

Obj #5-12: Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year.			
Baseline US	US Target	Baseline CO	CO Target
24percent	50percent	79.9percent	90percent
21percent (AA)		DNA (AA)	
22percent (H)		76.8percent(H)	
DNA (Rural)		76.3percent(Rural)	
Data source: 1998 US BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM; Colorado data: 1997-2000 BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM			

Obj #5-13: Increase the proportion of adults with diabetes who have an annual dilated eye exam.			
Baseline US	US Target	Baseline CO	CO Target
47percent	75percent	67.3 percent (1997-2000)	75percent
43percent (AA)		DNA (AA)	
38percent (H)		57.2percent (H)	
DNA (Rural)		63.8percent (Rural)	
Data source: US data: 1998 NHIS; Colorado data: 1997-2000 BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM			

Obj #5-14 Increase the proportion of adults with diabetes who have at least an annual foot examination.			
Baseline US	US Target	Baseline CO	CO Target
55percent	75percent	63.8percent	75percent
54percent (AA)		DNA (AA)	
56percent (H)		59.5percent(H)	
DNA (Rural)		67.8percent (Rural)	
Data source: US data: 1998 US BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM; Colorado data: 1997-2000 BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM			

Obj #5-15: Increase the proportion of persons with diabetes who have at least an annual dental examination.			
Baseline US	US Target	Baseline CO	CO Target
58percent	75percent	59.0percent	75percent
63percent (AA)			
32percent (H)			
Data source: US data: 1997 NHIS; Colorado: 1997-2000 Colorado BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM			

Obj #14-29: Increase the proportion of adults with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease.							
Baseline US		US Target		Baseline CO		CO Target	
Influ†	Pneumo†	Influ	Pneumo	Influϕ	Pneumoϕ	Influ	Pneumo
27percent	15percent	60percent	60percent	61.3percent	45.4percent	75percent	60percent
23percent (AA)	14percent (AA)			DNA (AA)	DNA (AA)		
24percent (H)	11percent (H)			72.0percent (H)	34.7percent (H)		
DNA (Rural)	DNA (Rural)			61.3percent (Rural)	40.5percent(Rural)		
Data source: US data: 1997 NHIS; Colorado data: 1997-2000 Colorado BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM							

†Non-institutionalized adults with diabetes aged 18-64 years.
ϕNon-institutionalized adults with diabetes age 18+ years.

Obj #12-15: Increase the proportion of adults with diabetes who have had their blood cholesterol checked within the preceding 5 years.			
Baseline US	US Target	Baseline CO [ô]	CO Target
67percent	80percent	85.8percent	95percent
Data source: US data: 1998 NHIS; Colorado data: 1997, 1999 Colorado BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM			

[ô] Colorado data represents the proportion of people with diabetes wl
the preceding year.

Morbidity

Obj #5-10: Reduce the rate of lower extremity amputations in persons with diabetes.			
Baseline US	US Target	Baseline CO	CO Target
4.1/1,000 (1997)	1.8/1,000	5.1/1,000 (1995)	2.5/1000
Data source: US data: 1997 National Hospital Discharge Survey; Colorado data: Colorado Hospital Association			

Obj #4-7: Reduce kidney failure due to diabetes.			
Baseline US	US Target	Baseline CO	CO Target
113/1,000,000∗ (1996)	78/1,000,000*	76.3/1,000,000* (1990-1997)	50/1,000,000*
Data source: US data: US Renal Data System, NIH, NIDDK; Colorado data: Intermountain ESRD[1] Network, Inc.			

∗Diabetic persons with new cases of ESRD per million population.

[6] End-Stage Renal Disease

Mortality

Objective # 5-5: Reduce the diabetes death rate.			
Baseline US	US Target	Baseline CO	CO Target
75/100,000 (1997)	45/100,000	50.8/100,000	45/100,000
130/100,000 (AA)		96.3/100,000(AA)	
86/100,000 (H)		95.3/100,000(H)	
Data source: US data: National Center for Health Statistics; Colorado Vital Records 1994-1998			

Objective #5-7: Reduce deaths from cardiovascular disease in persons with diabetes.			
Baseline US	US Target	Baseline CO	CO Target
343/100,000 (1997)	309/100,000	TBD	309/100,000
283/100,000 (AA)			
270/100,000 (H)			
Data source: US data: National Center for Health Statistics			

Crosswalk between Healthy People 2010 Diabetes Objectives and Colorado State Plan Goals and Objectives

Healthy People 2010 Objective	Colorado Diabetes State Plan Goal	Colorado State Plan Outcome Objective
Objective #5-3. Reduce the overall rate of diabetes that is clinically diagnosed. Objective #5-4. Increase the proportion of adults with diabetes whose condition has been diagnosed.	All Coloradans at high risk for diabetes will know their risk factors for diabetes, will understand which strategies are effective for prevention or delay of the disease, and will be tested for diabetes according to recommended intervals.	By 2010, reduce the overall rate of diabetes that is clinically diagnosed in Colorado adults from 4.3percent to 2.5percent.
Objective #5-1: Increase the proportion of persons with diabetes who receive formal diabetes education. Obj #5-17: Increase the proportion of persons with diabetes who perform self-blood glucose monitoring at least once daily.	All Coloradans with diabetes will have access to high quality medical care, self-management education, supplies, and medications to control their disease.	By 2010, increase the proportion of adult Coloradans with diabetes who have ever received formal diabetes education from 60.3percent in 2000 to 75percent. By 2010, increase the proportion of adult Coloradans with diabetes who perform self-blood glucose monitoring at least once a day from 50.1percent to 75percent.
Obj #5-12: Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year. Obj #5-13: Increase the proportion of adults with diabetes who have an annual dilated eye exam. Obj #5-15: Increase the proportion of adults with diabetes who have at least an annual dental exam. Obj #5-14 Increase the proportion of adults with diabetes who have at least an annual foot examination. Obj #5-10: Reduce the rate of lower extremity amputations in persons with diabetes.	All providers who care for Coloradans with diabetes will be current on strategies for diabetes prevention or delay, evidence-based diabetes care, and will have access to the resources and tools needed to provide that care.	By 2010, increase the proportion of adult Coloradans with diabetes who have a glycosylated hemoglobin measurement at least once a year from 79.9percent to 90percent. By 2010, increase the proportion of adult Coloradans with diabetes who have a dilated eye exam at least once a year from 67.3percent to 75percent. By 2010, increase the proportion of adult Coloradans who have had a dental exam in the past year from 59.0percent to 75percent. By 2010, increase the proportion of adult Coloradans with diabetes who have a foot exam at least once a year from 63.8percent to 75percent.

Obj #14-29: Increase the proportion of adults with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease. Objective # 5-5: Reduce the diabetes death rate. Obj #12-15: Increase the proportion of adults with diabetes who have had their blood cholesterol checked within the preceding 5 years. Objective #5-7: Reduce deaths from cardiovascular disease in persons with diabetes		By 2010, increase the proportion of adult Coloradans with diabetes who are vaccinated annually against influenza and ever vaccinated against pneumococcal disease from 61.3percent and 45.4percent to 75percent and 60percent, respectively. By 2010, increase the proportion of adult Coloradans with diabetes who have had their blood cholesterol checked within the past year from 85.8percent to 95percent.

What is diabetes?

Diabetes mellitus is a group of diseases characterized by high levels of blood glucose resulting from defects in insulin production, insulin action, or both. Diabetes can be associated with serious complications and premature death, but people with diabetes can take steps to control the disease and lower the risk of complications.

Types of diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys the pancreatic beta cells, the only cells in the body that make the hormone insulin that regulates blood glucose. This form of diabetes usually strikes children and young adults, who need several insulin injections a day or an insulin pump to survive. Type 1 diabetes may account for 5percent to 10percent of all diagnosed cases of diabetes. Risk factors for type 1 diabetes include autoimmune, genetic, and environmental factors.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type 2 diabetes may account for about 90percent to 95percent of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce insulin. Type 2 diabetes is associated with older age, obesity, family history of diabetes, prior history of gestational diabetes, impaired glucose tolerance, physical inactivity, and race/ethnicity. African Americans, Hispanic/Latino Americans, American Indians, and some Asian Americans and Pacific Islanders are at particularly high risk for type 2 diabetes. Type 2 diabetes is increasingly being diagnosed in children and adolescents.

Gestational diabetes is a form of glucose intolerance that is diagnosed in some women during pregnancy. Gestational diabetes occurs more frequently among African Americans, Hispanic/Latino Americans and American Indians. It is also more common among obese women with a family history of diabetes. During pregnancy, gestational diabetes requires treatment to normalize maternal blood glucose levels to avoid complications in the infant. After pregnancy, 5percent to 10percent of women with gestational diabetes are found to have type 2 diabetes. Women who have had gestational diabetes have a 20percent to 50percent chance of developing diabetes in the next 5-10 years.

Other specific types of diabetes result from specific genetic conditions (such as maturity-onset diabetes of youth), surgery, drugs, malnutrition, infections, and other specific illnesses. Such types of diabetes may account for 1percent to 5percent of all diagnosed cases of diabetes.

Treatment of Diabetes

- In order to survive, people with type 1 diabetes must have insulin delivered by a pump or injections.
- Many people with type 2 diabetes can control their blood glucose by following a careful diet and exercise program, losing weight and taking oral medication.
- Many people with diabetes also need to take medications to control their cholesterol and blood pressure.
- Among adults with diagnosed diabetes, about 11percent take both insulin and oral

medications, 22percent take insulin only, 49percent take oral medications only, and 17 percent do not take either insulin or oral medications.

Impaired glucose tolerance and impaired fasting glucose

- Impaired glucose tolerance (IGT) and impaired fasting glucose (IFG) are considered to be prediabetic conditions, and studies suggest that they may be reversible.
- IGT is a condition in which the blood sugar level is elevated (between 140 mg/dl and 199 mg/dl in a 2-hour oral glucose tolerance test), but is not high enough to be classified as diabetes.
- IFG is a condition in which the fasting blood glucose level is elevated (between 110 mg/dl and 125 mg/dl after an overnight fast) but is not high enough to be classified as diabetes.
- Among U.S. adults 40-74 years of age, 16.0 million (15.6percent) have IGT and 10.0 million (9.7percent) have IFG.

Prevention of diabetes

Research studies in the United States and abroad have found that lifestyle changes can prevent or delay the onset of type 2 diabetes among high-risk adults. These studies included people with IGT and other high-risk characteristics for developing diabetes. Lifestyle interventions included diet and moderate-intensity physical activity (such as walking for 2 ½ hours each week). For both sexes and all age and racial and ethnic groups, the development of diabetes was reduced 40percent to 60percent during these studies that lasted 3 to 6 years.

Studies have also shown that medications have been successful in preventing diabetes in some population groups. In the Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, people treated with the drug metformin reduced their risk of developing diabetes by 31percent. Treatment with metformin was most effective among younger, heavier people (those 25-40 years of age who were 50 to 80 pounds overweight) and less effective among older people and people who were not as overweight.

There are no known methods to prevent type 1 diabetes. Several clinical trials are now in progress.

> Diabetes is serious, common, costly……but controllable.
>
> Division of Diabetes Translation, CDC.

Prevention of Diabetes Complications

Glucose control

- Research Studies in the United States and abroad have found that improved glycemic control benefits people with either type 1 or type 2 diabetes. In general, for every 1percent reduction in results of A1C blood tests, the risk of developing microvascular diabetic complications (eye, kidney, and nerve disease) is reduced by 40 percent.

Blood pressure control

- Blood pressure control can reduce cardiovascular disease (heart disease and stroke) by approximately 33 percent and 50 percent and can reduce microvascular disease

(eye, kidney, and nerve disease) by approximately 33 percent.
- In general, for every 10 millimeters of mercury (mmHg) reduction in systolic blood pressure, the risk for any complication related to diabetes is reduced by 12 percent.

Control of blood lipids (cholesterol and fats)

- Improved control of cholesterol and lipids (for example, HDL, LDL, and triglycerides) can reduce cardiovascular complications by 20 percent to 50 percent.

Preventive care practices for eyes, kidneys, and feet

- Detection and treatment of diabetic eye disease with laser therapy can reduce the development of severe vision loss by an estimated 50 percent to 60 percent.
- Comprehensive foot care programs can reduce amputation rates by 45 percent to 85 percent.
- Detection and treatment of early diabetic kidney disease can reduce the development of kidney failure by 30 percent to 70 percent.

From: National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2002.

A1C: a test that sums up how much glucose has been sticking to part of the hemoglobin over the past 3-4 months.

acute: present for a limited period of time; abrupt onset

behavioralist: health professionals who specialize in human behavior, usually psychologists, psychiatrists, social workers, counselors

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.

blood glucose meter: a machine used to measure blood glucose from a drop of blood placed on a specially coated strip; can be used outside of a physician's office or lab

Behavioral Risk Factor Surveillance System: Behavioral Risk Factor Surveillance System; a national random digit-dialed telephone survey conducted in Colorado by the Health Statistics Section, Colorado Department of Public Health and Environment

chronic: present over a long period of time; diabetes is a chronic disease

complication: secondary health problem; eye disease, foot problems, heart and kidney disease are complications of diabetes

diabetes educator: a health care professional who specializes in teaching people with diabetes how to manage their chronic disease.

dilated eye exam: an eye exam in which eye drops are put in the eyes prior to the exam; the drops enlarge the pupils so that the doctor can clearly see the retina, or back of the eye

glucose: a simple sugar; the body's primary source of energy

glycosylated hemoglobin: a blood test used to measure blood glucose control over a 3-4 month period of time; also called hemoglobin A1c, or A1c

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 (for example one year)

intervention: an activity or program intended to improve outcomes

media channels: official communication routes; for example television, radio, print media.

metabolic control: the level of one's blood glucose over time.

modifiable: can be changed

morbidity: related to a disease or sickness

mortality: related to death

outcome objective: the level to which a health problem is expected to be reduced within a specified period of time; a statement of how much and when the health problem should be affected by the program; outcome objectives should be long term, realistic, and measurable.

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.

process objective: action statements aimed at affecting one or more of the factors that influence a health problem; process objectives describe what needs to be accomplished by the program, usually during one year; process objectives should be short term (one year), realistic, and measurable

qualitative: related to or concerning the nature, or characteristics, of someone or something, without regard to quantity

risk factor: traits that increase the chance that a person will get an illness

self-monitoring of blood glucose: a method for testing the level of glucose in the blood using a blood glucose meter that can be done by the person with diabetes; also called home blood glucose monitoring

third party reimbursement: payment for medical care through a health plan or agency, such as an insurer.

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