



The State of Diabetes in Arkansas



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Executive Summary

The Arkansas Diabetes Prevention and Control Program is funded by the Centers for Disease Control and Prevention to reduce and prevent the burden of diabetes in Arkansas. Information on the burden of diabetes in Arkansas is compiled every other year. This report is intended to describe the impact of diabetes in Arkansas for program managers, Diabetes Advisory Council members, policy makers, researchers, and other interested parties. It is hoped that this information will, provide assistance in determining where interventions are needed.

The Salient Findings

- Diabetes has reached epidemic proportions in Arkansas. The prevalence of diabetes in Arkansas has been at or above the national average for the past 10 years. There was a 35 percent increase in the diabetes prevalence from 1993 to 2002.
- An estimated 227,000 adult Arkansans had diabetes in 2003. Of those, 151,000 were diagnosed, but it remained undetected and untreated in the rest.
- The prevalence of diabetes increases with age, with the prevalence among persons over the age of 45 being more than four times greater than the prevalence found among younger persons.
- The diabetes prevalence among African Americans (9.7%) is significantly higher than among whites (7.1%).
- Diabetes is the 6th leading cause of death in Arkansas and the 4th leading cause of death among African Americans.
- In 2003, 5619 hospitalizations were reported among people with diabetes in Arkansas. An estimated \$73 million was accrued in hospitalization costs for people with diabetes.
- In 2002, 869 lower extremity amputations, 1576 hospitalizations for ketoacidosis, 372 incident cases of chronic end-stage renal disease, and 317 deaths among persons receiving dialysis were attributed to diabetes.

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Diabetes Mellitus

Diabetes is a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life.¹

Diabetes can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations.²

The cause of diabetes continues to be a mystery, although both genetics and environmental factors such as obesity and lack of exercise appear to play roles.¹

An estimated 18.2 million Americans, or 6.3 percent of the U.S population, have diabetes. About two-thirds of these individuals, or 13 million, have been diagnosed with diabetes. The remaining third, or 5.2 million, are unaware that they have diabetes.

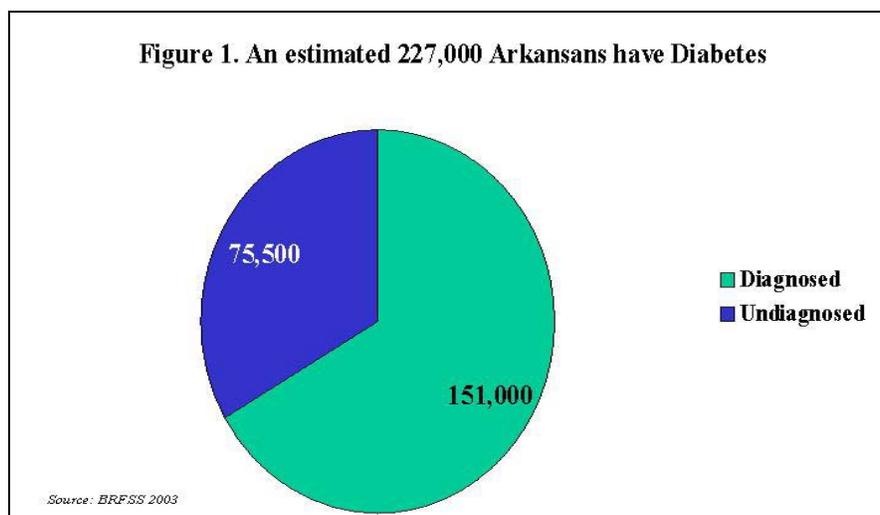
Types of Diabetes:

Type 1 – Failure of the body to produce insulin. Accounts for 5 to 10 percent of all cases

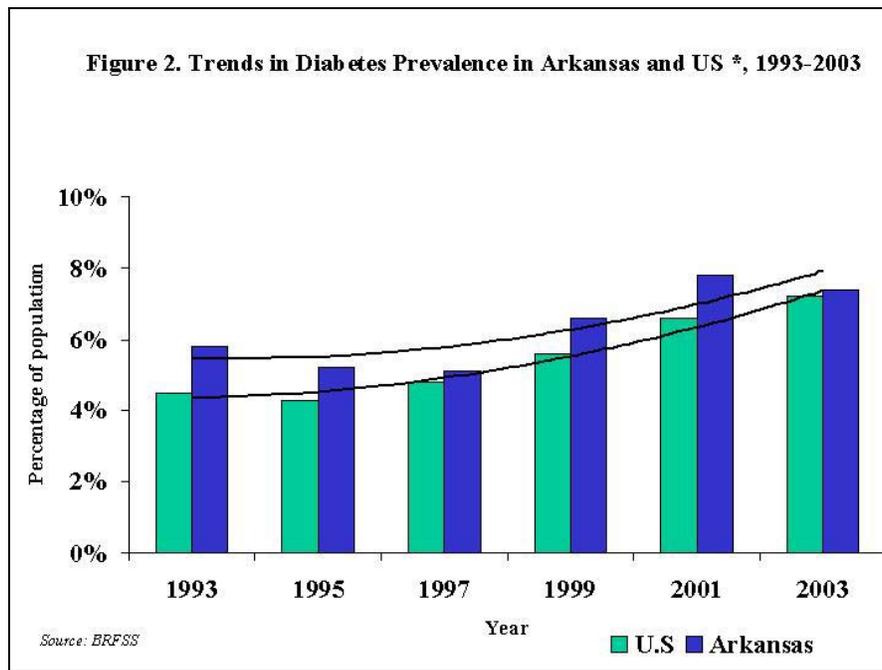
Type 2 – Insulin resistance combined with relative insulin deficiency. Accounts for 90 to 95 percent of all cases

Gestational diabetes – Failure of the body to make and use all the insulin it needs for pregnancy. Occurs in 2 to 5 percent of all pregnant women

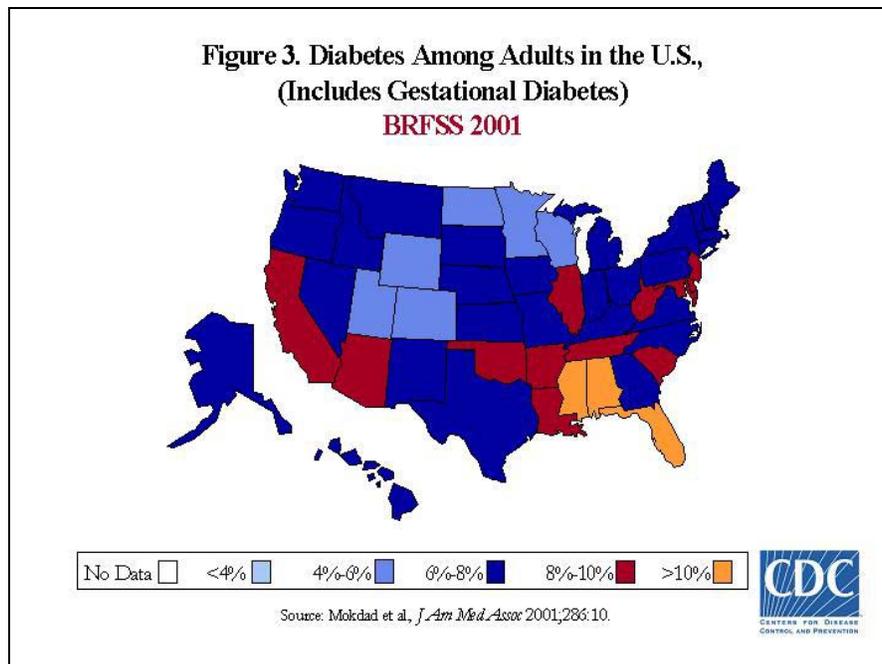
Prevalence of Diabetes in Arkansas



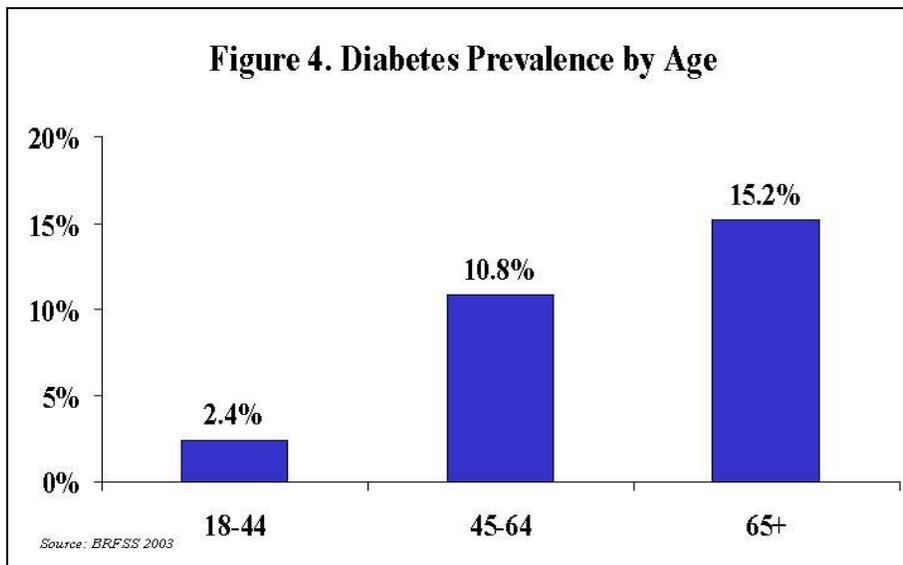
- Approximately 227,000 Arkansans have diabetes. An estimated 7.4 percent have been told that they have diabetes, which accounts for 151,000 people. The other 75,500 remain undiagnosed.



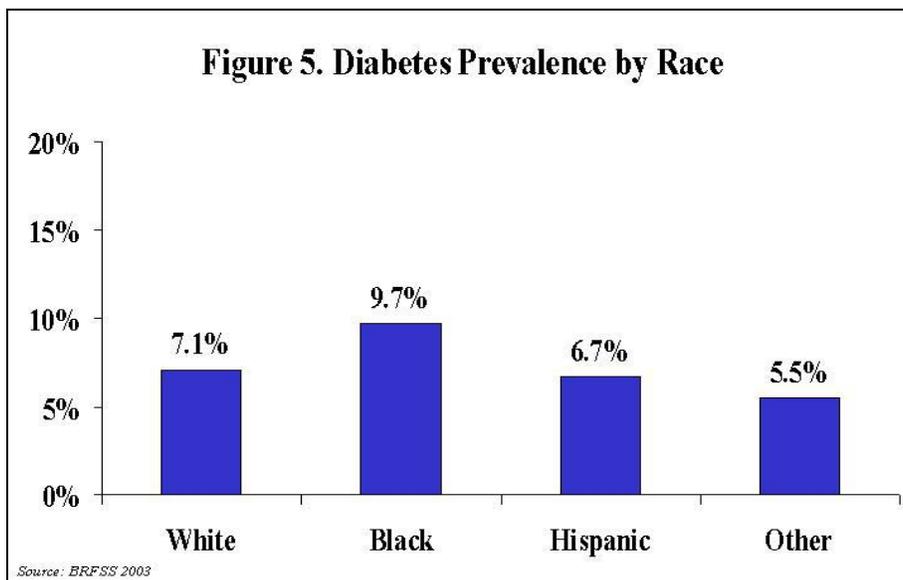
- Diabetes prevalence both in Arkansas and nationwide has increased over the past decade.
- Diabetes prevalence in Arkansas has been above the national median throughout the past decade.
- Diabetes prevalence in Arkansas rose from 5.8 percent in 1993 to 7.4 percent in 2003, a 28 percent increase over the 10-year period.



- Arkansas is in the second highest tier of diabetes prevalence in the nation.



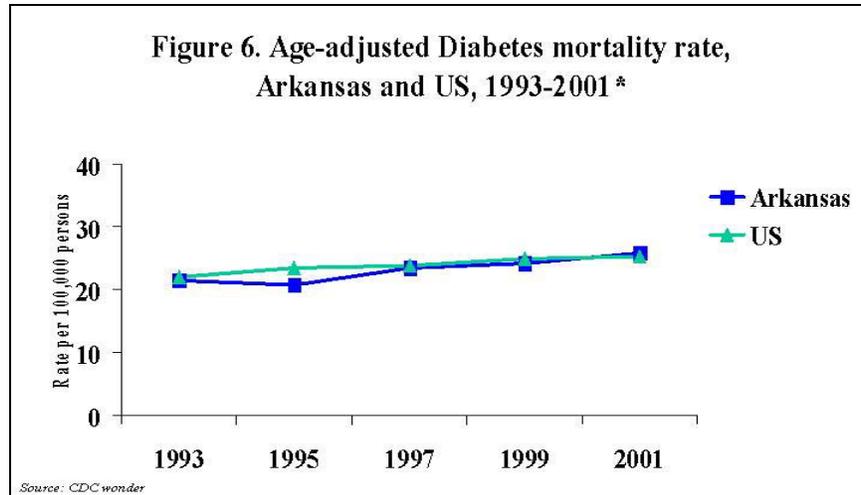
- Diabetes prevalence increases with age. The prevalence increases fourfold after the age of 45.
- The highest prevalence of diabetes is found among people 65 years of age or older.
- Like many other chronic diseases, diabetes can remain undetected for a long time before it is clinically diagnosed.



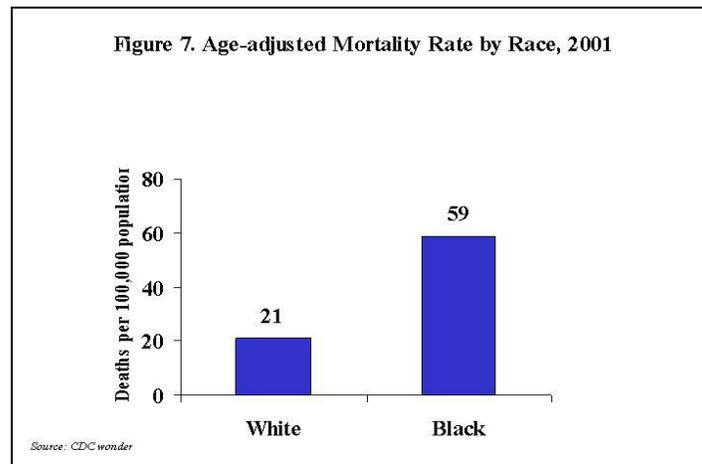
- Diabetes disproportionately affects minorities, primarily African Americans, and the prevalence varies by geographic region (see Map 1 on page 19).
- The diabetes prevalence among African Americans is 37 percent higher than the prevalence among whites.

Mortality

Diabetes is the sixth leading cause of death in Arkansas and in the U.S. Every year, 300,000 deaths nationally are attributed to diabetes and its complications.³



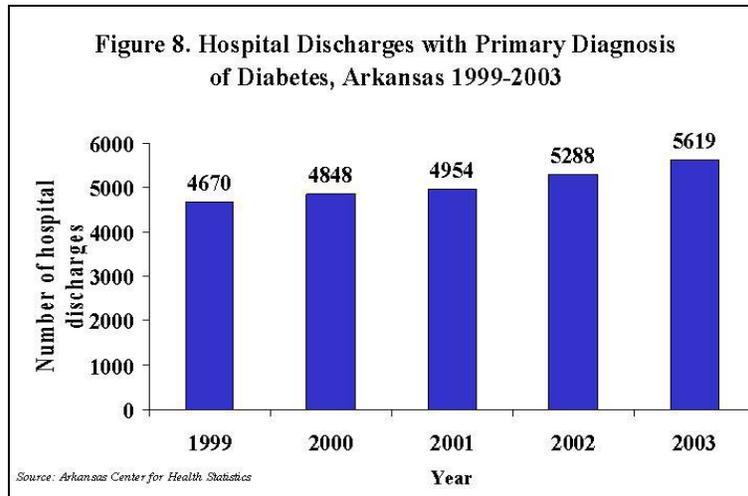
- Diabetes mortality has increased both in Arkansas and nationwide over the past decade.
- In 2001, the age-adjusted mortality rate for diabetes in Arkansas was the same as the national rate.
- Diabetes may well be underreported on death certificates as the leading cause of death. The CDC estimates that only 4 of 10 deaths among people with diabetes actually have diabetes listed as the cause of death.



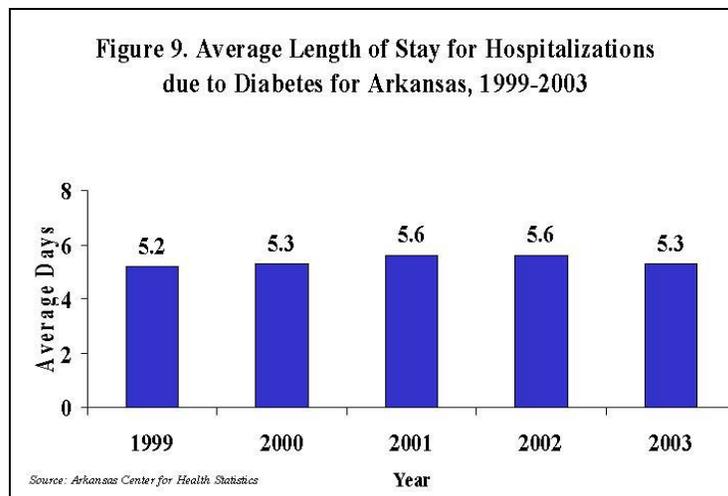
- The diabetes mortality rate for blacks is approximately three times higher than that for whites. Most of the deaths among blacks occur prematurely (before 65 years of age)⁶. The diabetes mortality rate also varies by geographic location (see Map 2 on page 20).

Hospitalizations

The Arkansas Hospital Discharge data system collects in-patient discharge information from all Arkansas hospitals. Based on the data, the number of hospital discharges with primary diagnosis of diabetes has been increasing over the past 5 years.

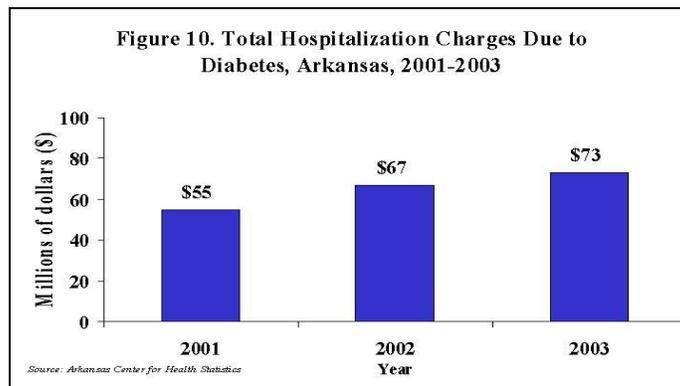


- More than 5600 discharges were reported in 2003.
- There has been a 20 percent increase in hospital discharges with primary diagnosis of diabetes in the 5-years since 1999.

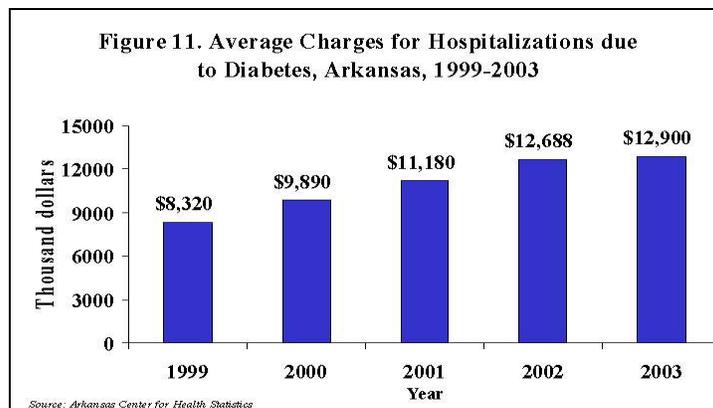


- During the same period, the average length of diabetes-related hospital stays increased, reaching a high of 5.6 days in 2002. There was a subsequent decrease in 2003 to 5.3 days. The reason for this pattern is not known.

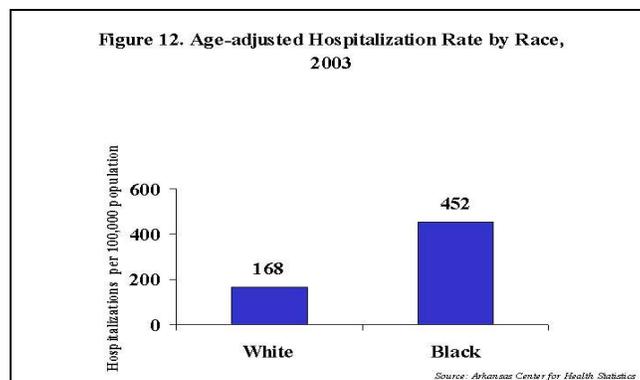
The costs due to diabetes include direct medical costs such as physician visits, hospitalizations, and pharmacy charges, as well as indirect costs, such as lost days of work, disability, and premature deaths. Data are not available to estimate the indirect costs. The direct medical costs due to hospitalizations are estimated from the Arkansas Hospital Discharge data system, although these estimates do not include outpatient costs.



- There has been a significant increase in total hospitalization charges due to diabetes in Arkansas. These charges increased from \$55 million in 2001 to \$73 million in 2003, a 33 percent increase.



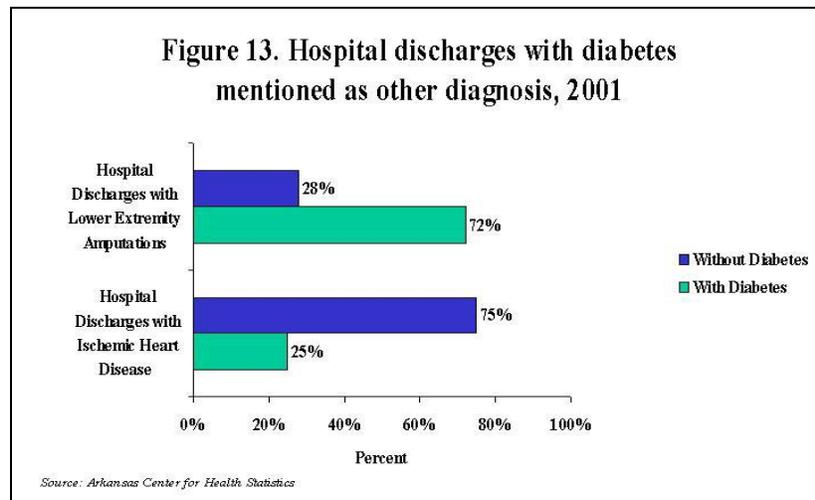
- The average hospitalization charges increased 55 percent from 1999 to 2003.



- The age-adjusted hospitalization rate for diabetes is significantly higher among blacks compared to whites. This may be due to the higher diabetes prevalence and fewer preventive care practices among blacks.

Complications

Diabetes can cause serious complications like heart disease, kidney disease, eye disease, foot problems, dental disease, pregnancy related complications and diabetic ketoacidosis.



- 25 percent of the people admitted to Arkansas hospitals for ischemic heart disease also had a diagnosis of diabetes.
- 72 percent of all lower extremity amputations performed during 2001 were performed on persons with diabetes.

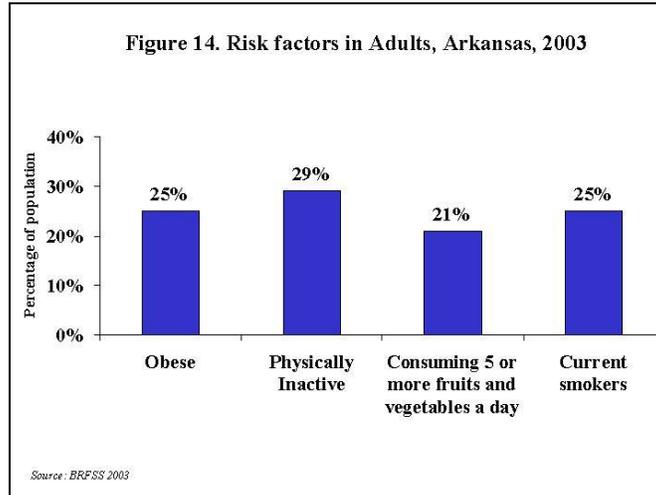
In 2002, diabetes accounted for:

- 869 lower extremity amputations
- 1576 hospitalizations for ketoacidosis
- 2939 hospitalizations for diabetic retinopathy (see Map 5 on page 23)
- 372 incident cases of chronic end-stage renal disease
- 317 deaths among persons receiving dialysis

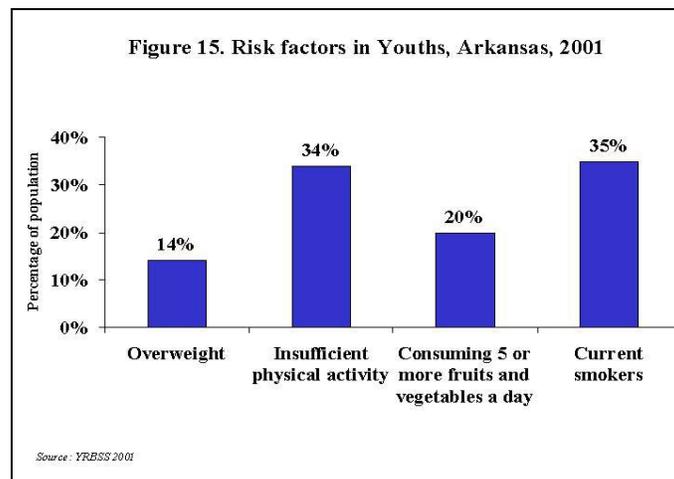
Good glucose control has been shown to prevent many of these complications.⁵

Risk Factors

Prevention is the key to halting the unfolding diabetes epidemic. Identification of the risk factors among the population and promotion of primary prevention measures are the first steps. The risk factors associated with a person developing diabetes can be classified as either modifiable⁴ risk factors such as obesity and physical inactivity, or non-modifiable risk factors such as age, race and family history of diabetes.

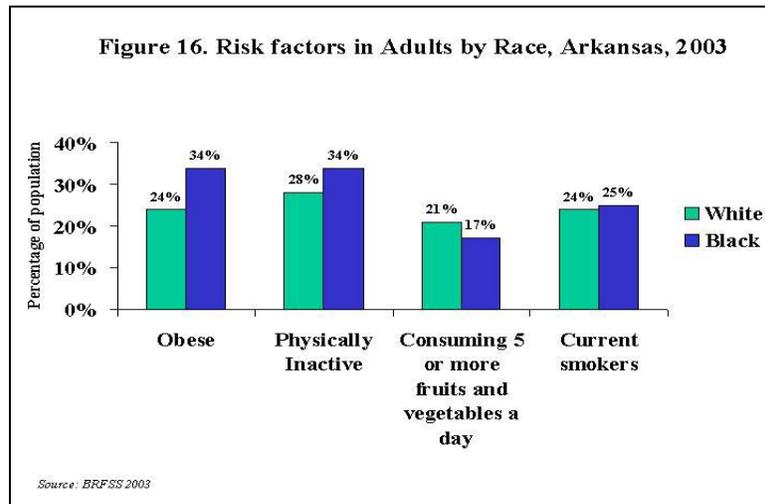


- Approximately one fourth of adults in Arkansas are obese, 29 percent are physically inactive and only 21 percent consume the recommended five servings of fruits and vegetables a day.
- 25 percent of adults in Arkansas are current smokers. Tobacco use increases cardiovascular complications for people with diabetes.



- 14 percent of Arkansas youths are overweight; 34 percent of youths are involved in insufficient physical activity.
- Only 1 in 5 of the Arkansas youths consume the recommended five servings of fruits and vegetables a day. More than one third of them are current smokers.

Figure 16 shows the racial differences among factors that increase the likelihood of a person developing diabetes.



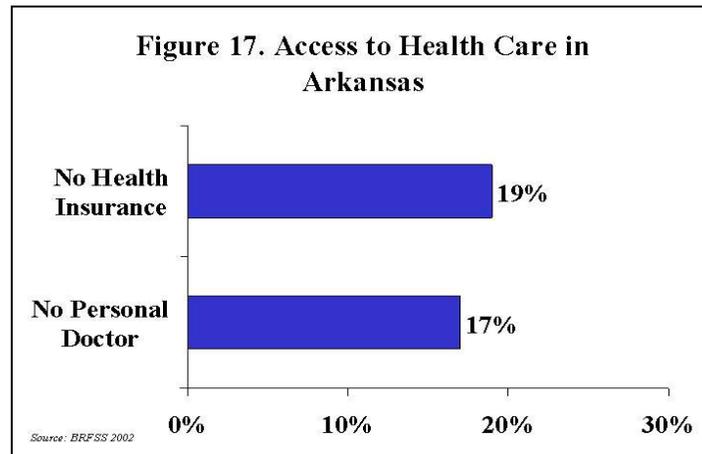
- The prevalence of obesity is 42 percent higher in blacks compared to whites.
- The prevalence of physical inactivity is 21 percent higher in blacks compared to whites.
- A lower proportion of black adults consume the recommended five or more fruits and vegetables a day compared to white adults.
- The proportion of current smokers was about the same in blacks and whites.

Research has shown that lifestyle changes can prevent or delay the onset of type 2 diabetes among high-risk adults. The Centers for Disease Control and Prevention recommend the maintenance of a healthy diet (5 or more servings of fruits and vegetables a day, reduced fat and sugar intake) and moderate physical activity (30 minutes a day, 5 days a week) for all adults.

The Diabetes Prevention Program, a large prevention study of people at high risk for diabetes, showed that the risk of developing diabetes could be reduced by 58 percent over 3 years by following the recommended lifestyle modifications.

Access to Health Care

Lack of health care access is a problem faced not only by people with diabetes but also by many Arkansans generally. Poor health consequences among people with diabetes can be secondary to limited availability of preventive services such as professional eye exams and foot exams.

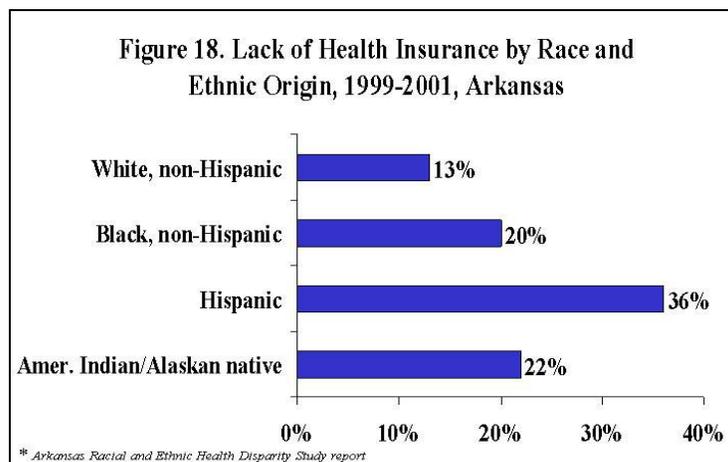


Barriers to health care access may include:

- Financial Barriers
- Structural Barriers
- Personal Barriers

Financial Barriers

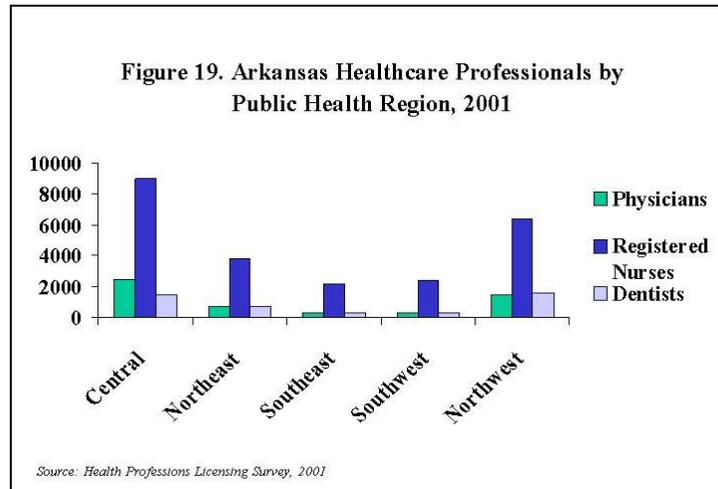
Lack of health insurance is a major financial barrier. It differs among different racial/ethnic groups in Arkansas.



- A greater proportion of minorities lack health insurance compared to whites.

Structural Barriers

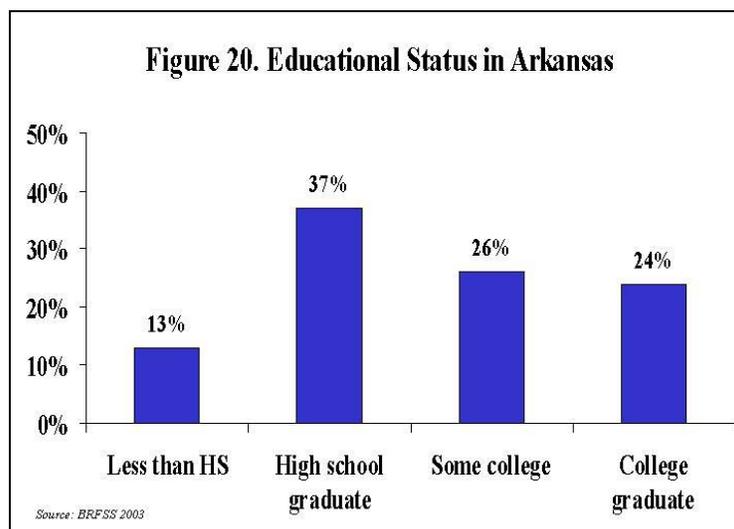
Approximately 22 percent of the state’s population lives in areas designated as Health Profession Shortage Areas (HPSAs) by the federal government. More than half of the state’s population live in areas designated as Medically Underserved Areas (MUAs).



- In Arkansas, the Southeast and Southwest Public Health Regions have fewer health care professionals compared to other public health regions. However this is not adjusted for population size.

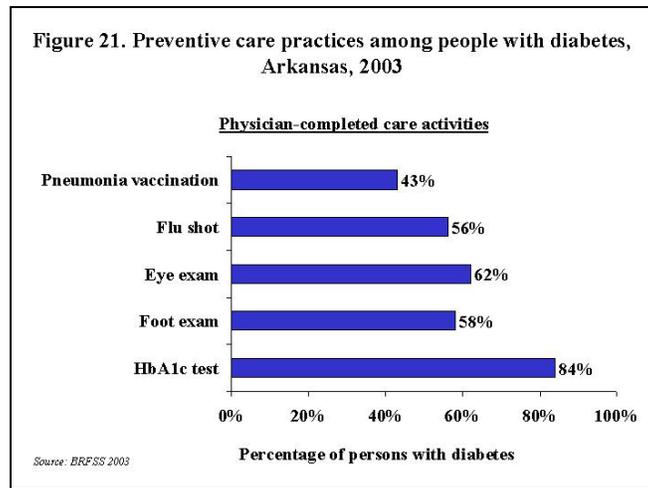
Personal Barriers

Even in the presence of health care infrastructure, personal barriers, such as lack of knowledge or trust in the system, could pose barriers to health care access. Promoting awareness and education among the general public regarding access to health care services is the key to eliminating this barrier.



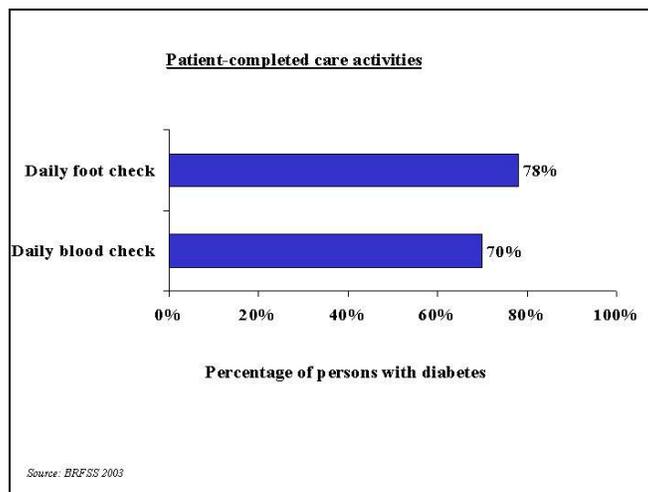
Preventive Care Practices

The Centers for Disease Control and Prevention and the American Diabetes Association have set national objectives for preventive care practices among people with diabetes. Following the recommended guidelines, which address receiving annual eye exams, foot exams, HbA1c checks, and flu and pneumonia vaccinations, has been shown to reduce the costs associated with complications of diabetes and also improves the quality of life among people with diabetes ^{1,2}.



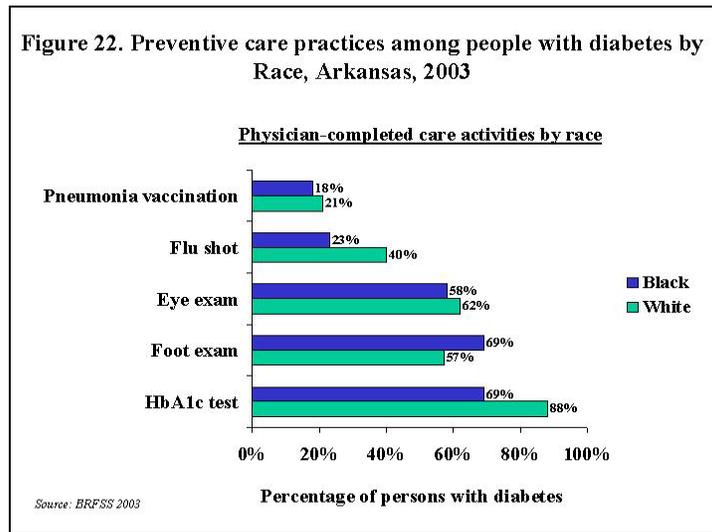
- Only 56 percent of people with diabetes report having received a flu shot in the past year
- Only 43 percent report having ever received a pneumonia vaccination.
- 63 percent reported they had received a dilated eye examination and fewer still (58%) reported receiving a foot examination by a health care provider.

The guidelines also recommend daily blood glucose checks and foot checks for the people with diabetes.



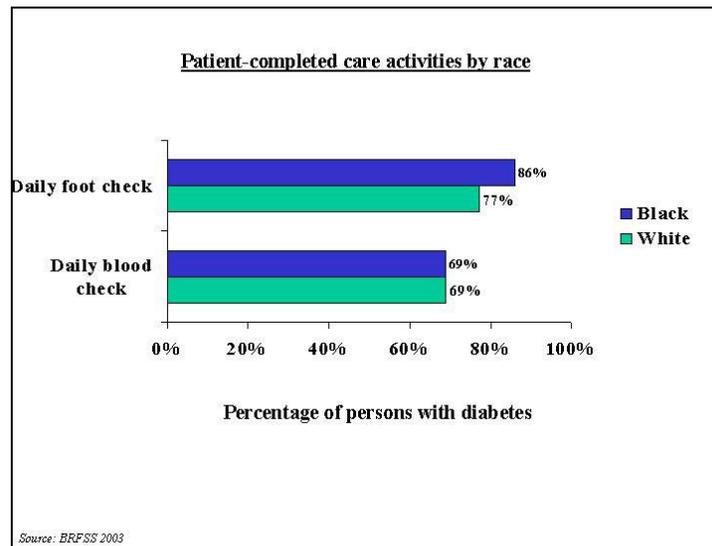
- Only 78 percent reported checking their feet daily for any sores or irritations.
- Less than three-fourths checking their blood glucose daily.

There were racial differences in preventive care practices among people with diabetes. According to the Behavioral Risk Factor Surveillance Survey (BRFSS):



- Fewer blacks (69%) received HbA1c tests in the past year than whites (88%).
- Fewer whites (57%) received foot exams by a professional than blacks (69%).
- Fewer blacks (58%) received dilated eye exam in the past year than whites (62%).
- Fewer blacks (23%) received flu shot in the past year than whites (40%).
- Fewer blacks (18%) ever received pneumonia vaccination than whites (21%).

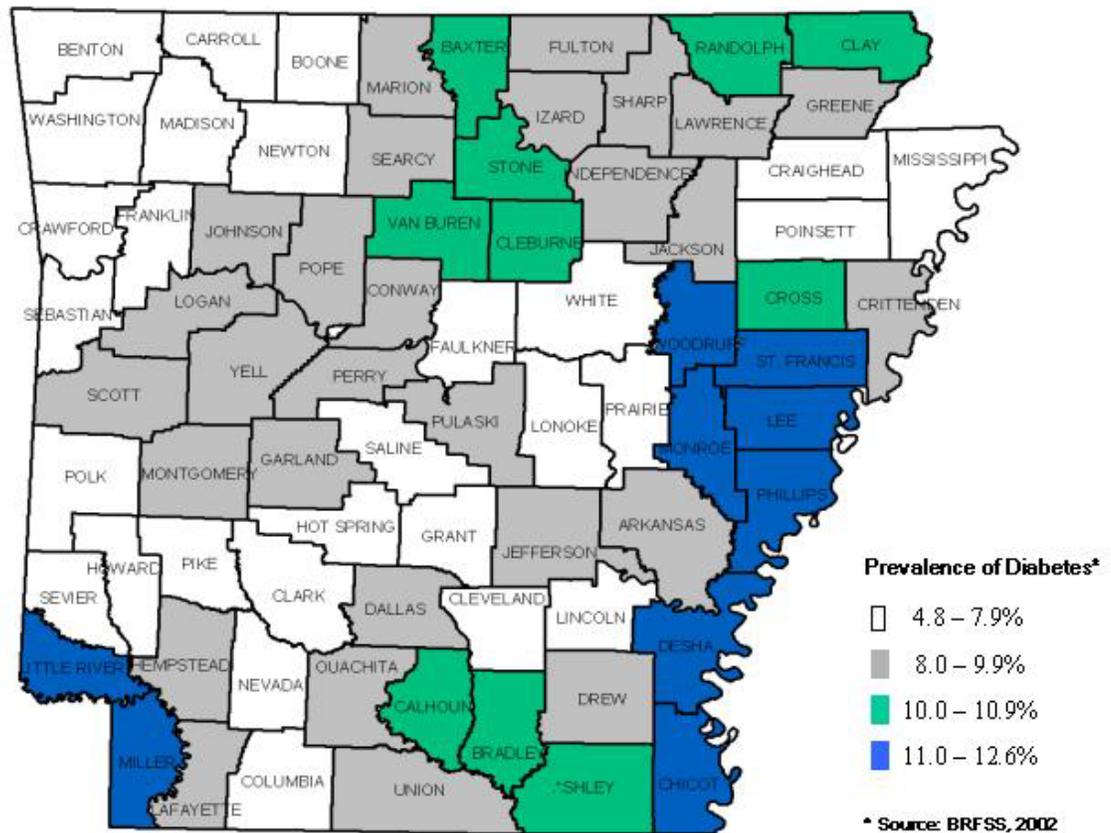
There were racial differences even among the patient-completed preventive care practices.



- Fewer whites (77%) checked their feet everyday than blacks (86%).
- No difference was found between blacks and whites in daily blood glucose check.

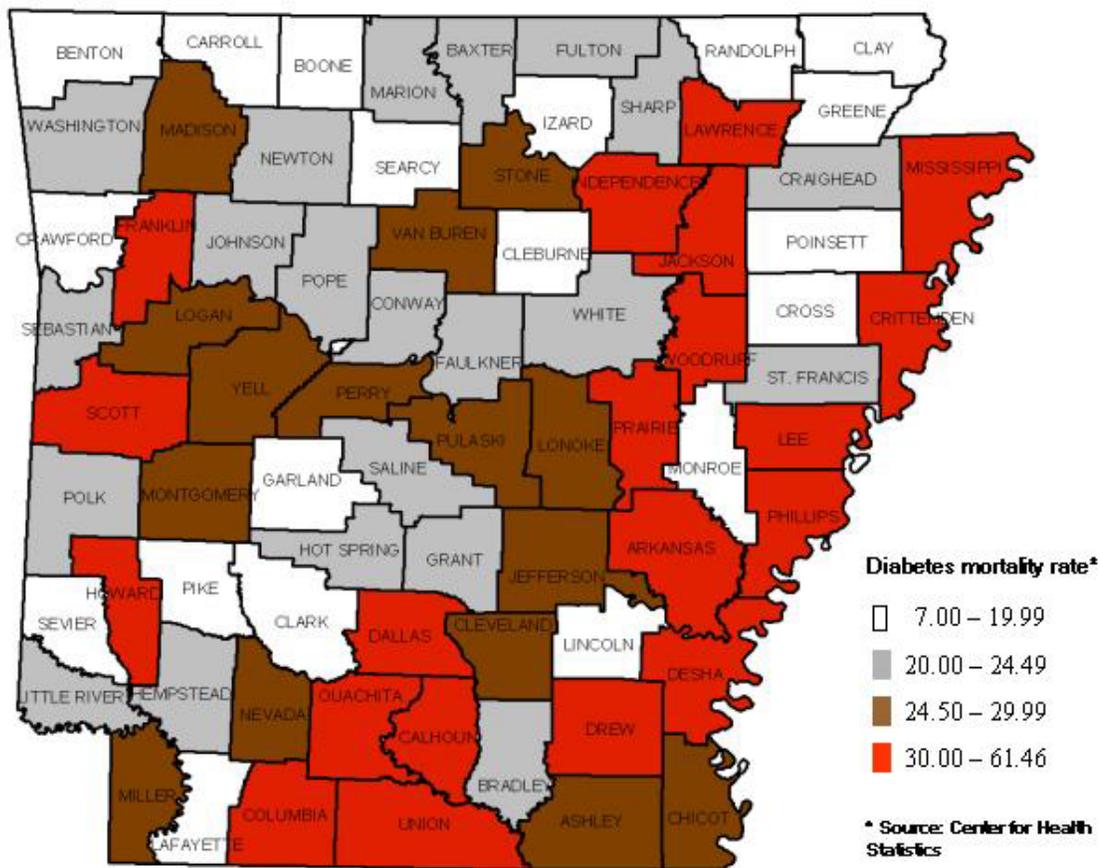
County Data

Diabetes Prevalence in Arkansas, 2002



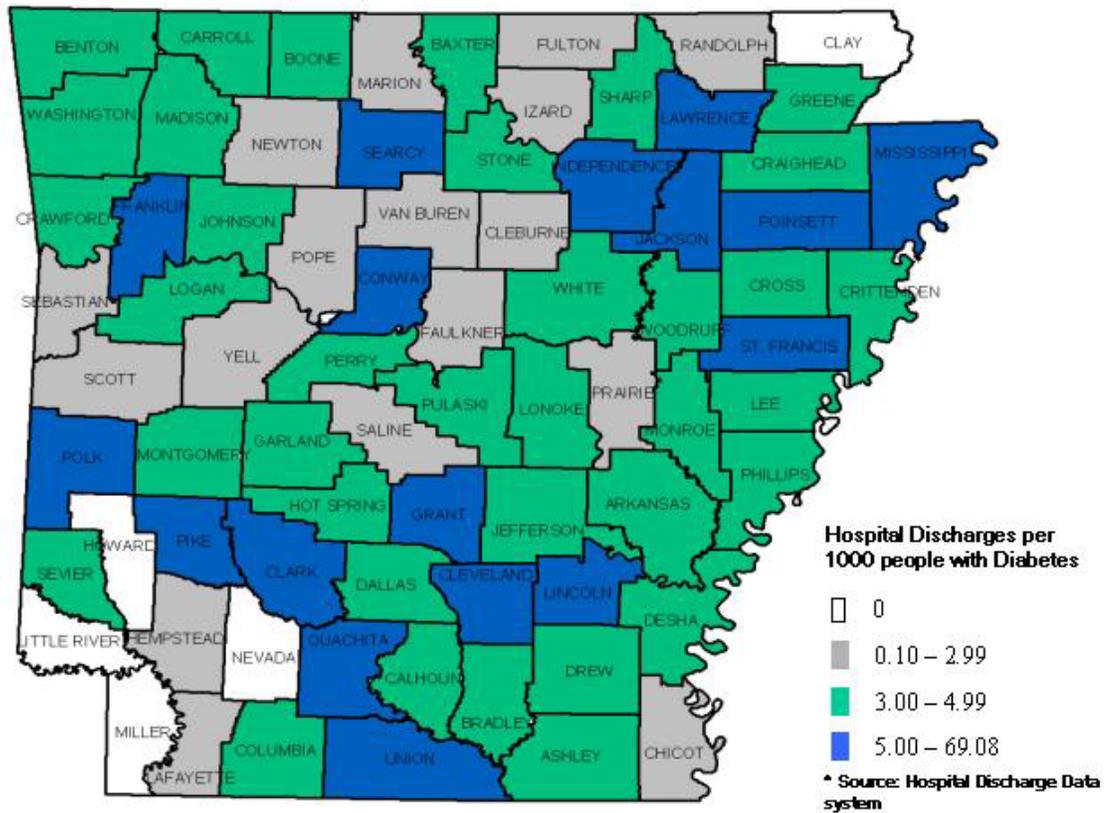
- The prevalence of diabetes appears to be disproportionately high in certain parts of the state.
- Counties in the Southeastern part of the state (along the Mississippi delta, shaded blue) have the highest estimated diabetes prevalence.

Age-adjusted mortality rate by county, 1999-2001*



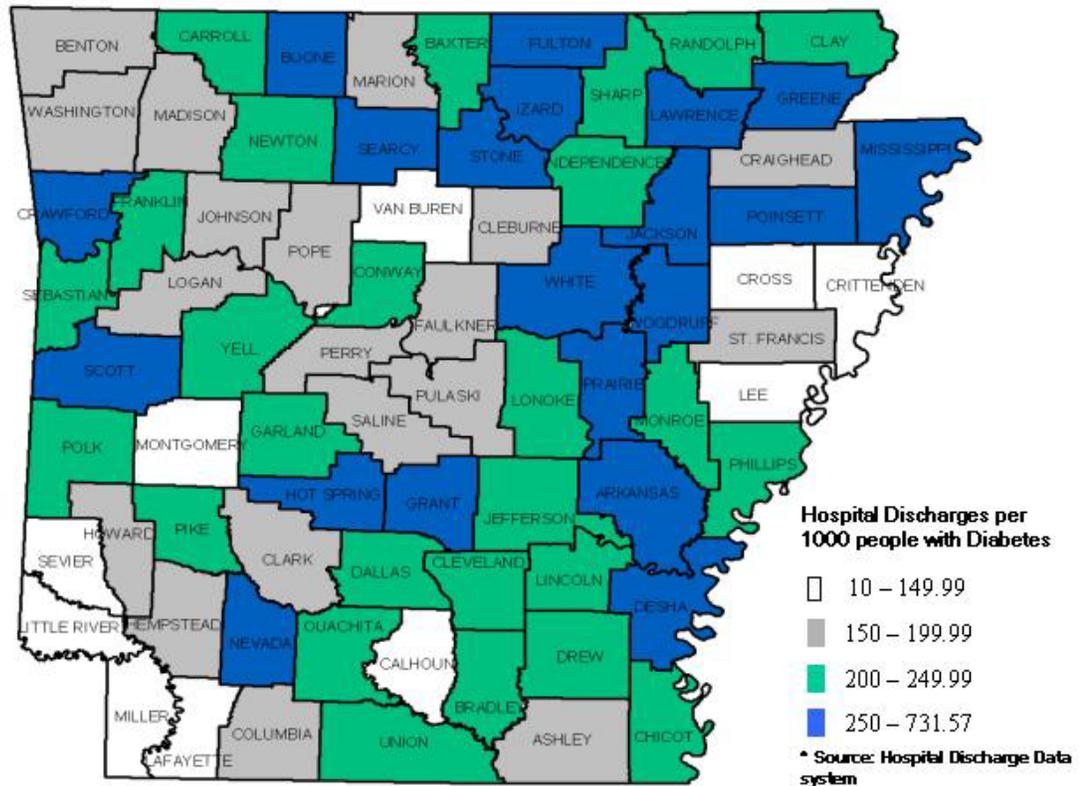
- Mortality rates for diabetes are higher in some counties than in others.
- Counties shaded red are those with the highest age-adjusted mortality rates for diabetes.

Hospital Discharge Rate for Lower Extremity Amputations per 1000 people with Diabetes, 2001



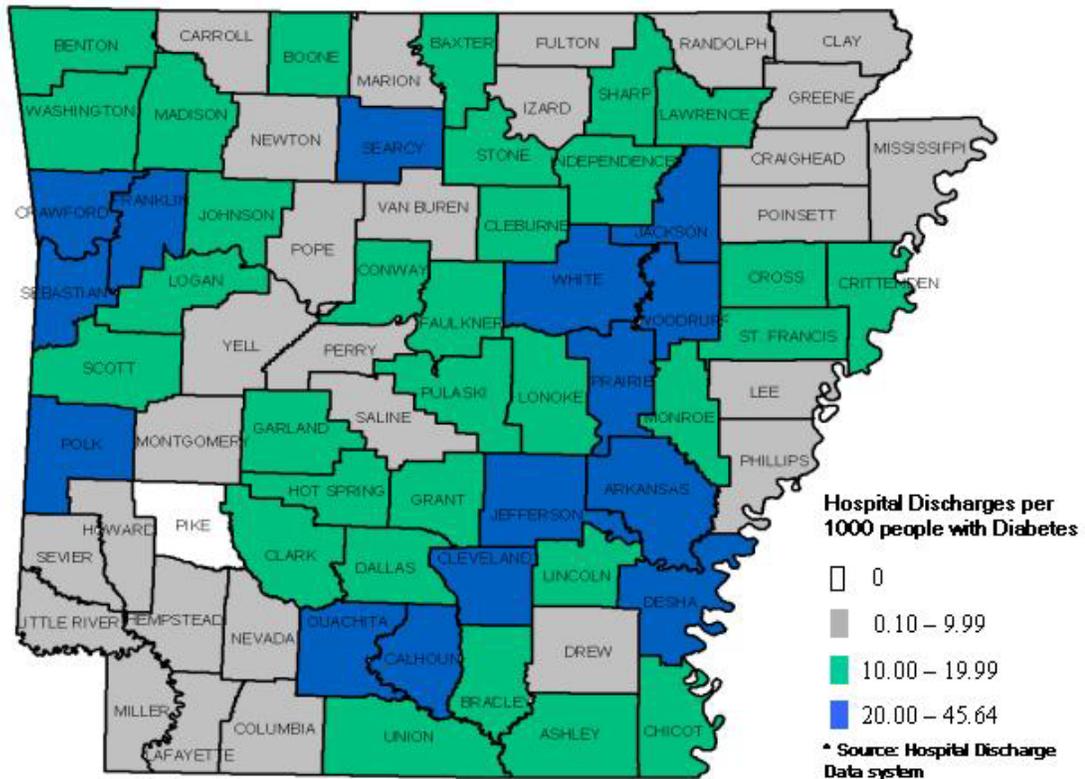
- Diabetes can damage both the nerves and the blood vessels to the feet, leading to numbness, burning sensation, poor circulation and possibly lower extremity amputation.
- Counties shaded blue have higher hospital discharge rates for lower extremity amputations per 1000 people with diabetes.

Hospital Discharge Rate for Heart disease per 1000 people with Diabetes, 2001



- Diabetes causes heart disease, especially in people with high blood pressure and high cholesterol. Heart disease is the leading cause of death among people with diabetes.
- Counties shaded blue have higher hospital discharge rates for heart disease per 1000 people with diabetes.

Hospital Discharge Rate for Diabetic Retinopathy per 1000 people with Diabetes, 2001



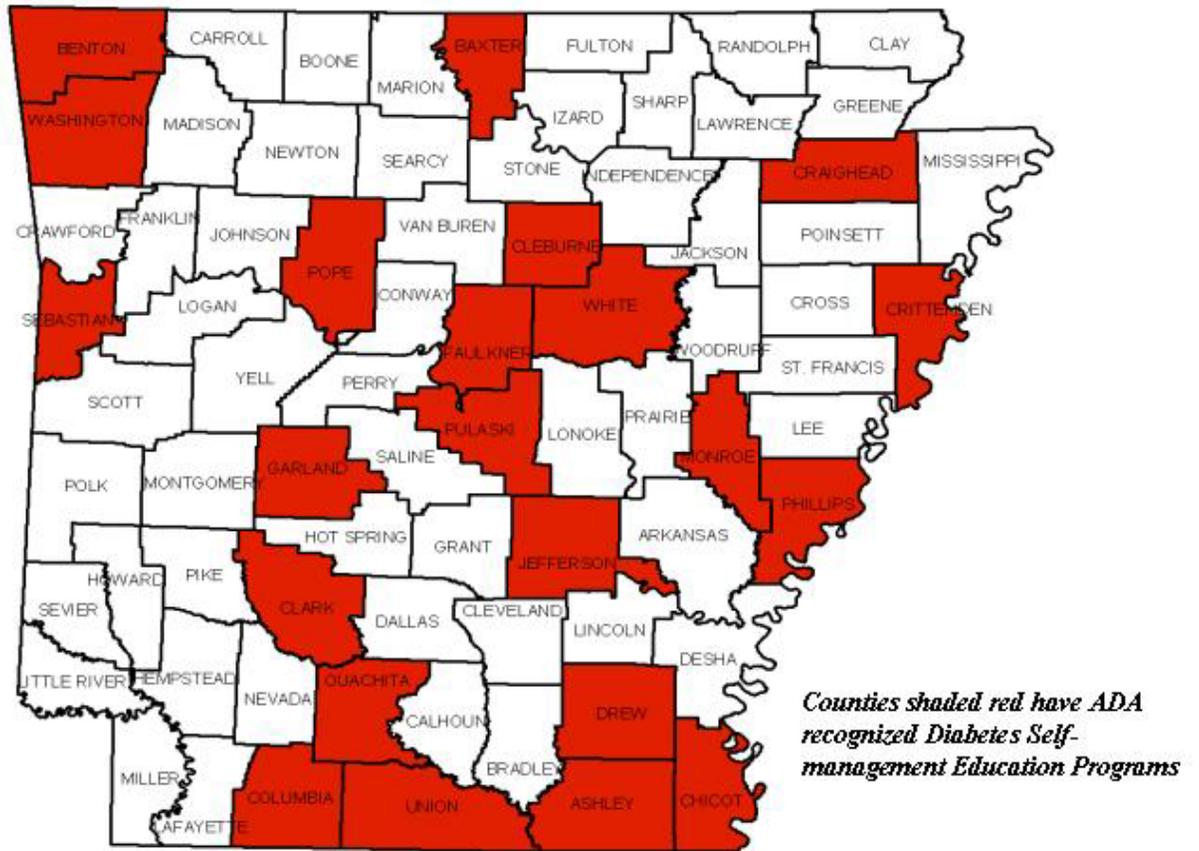
- Poorly controlled diabetes can result in diabetic retinopathy, and subsequent blindness.
- Counties shaded blue have higher hospital discharge rates for diabetic retinopathy.

Distribution of Eye care providers in Arkansas, 2003



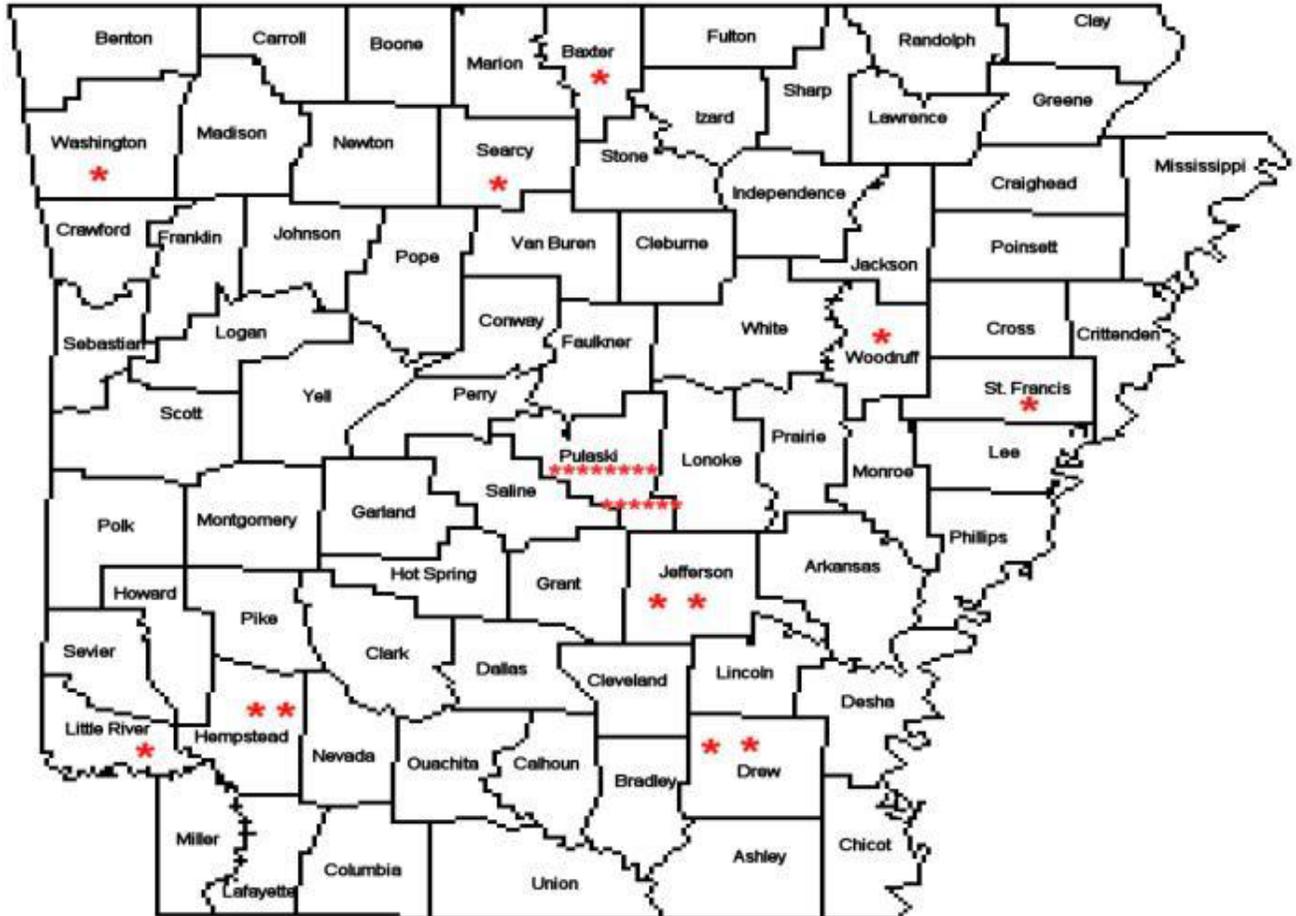
- The disproportionate burden of diabetic retinopathy in some counties may be associated in part with the differential distribution of the eye care providers.
- Eye care providers tend to be clustered in counties within the central and northwest regions of the state and to be less common, in the remainder of the state.

American Diabetes Association Recognized Education Programs



- More than half of the counties do not have an American Diabetes Association (ADA) recognized diabetes self-management education program.
- Arkansas Diabetes Prevention and Control Program along with its advisory council members are working together to establish ADA-recognized programs in all Arkansas counties.

Arkansas Diabetes Advisory Council Members *



- The Arkansas Diabetes Prevention and Control Program formed the Arkansas Diabetes Advisory Council, along with its partners, to work toward reducing the diabetes burden in Arkansas.
- Although most of the Diabetes Advisory Council members are located centrally in Pulaski County, it has members representing each of the public health regions within the state.

Arkansas Demographics

Arkansas, the Natural State, is home to 2.6 million citizens. Arkansas is blessed with an abundance of clean air, clean water, and a great outdoors.

Some general information about Arkansas:

The following facts were obtained from the 2000 US Census:

- **Total population** **2,673,400**
 - Females 51.2%
 - Males 48.8%

- **Age distribution**
 - Persons under 18 years 25.4%
 - Persons 18-64 years 60.0%
 - Persons 65 years and over 14%

- **Racial/Ethnic distribution**
 - Whites 80%
 - Blacks or African Americans 15.7%
 - Hispanic 3.2%
 - Asian 0.8%
 - American Indian and Alaskan native 0.7%
 - Native Hawaiian and Pacific Islander 0.1%

- **Median household income** **\$32,182**

- **Persons below poverty** **15.8%**

Healthy People 2010 Objectives

1. Increase the proportion of persons with diabetes who receive formal diabetes education from 45% to 60%.
2. Prevent Diabetes. Decrease new cases of diabetes from 3.5 cases per 1000 population to 2.5 cases per 1000 population.
3. Reduce the overall rate of diabetes that is clinically diagnosed from 40 cases per 1000 population to 25 cases per 1000 population.
4. Increase the proportion of adults with diabetes whose condition has been diagnosed from 68 percent to 80 percent.
5. Reduce the diabetes death rate from 75 deaths per 100,000 population to 45 deaths per 100,000 population.
6. Reduce diabetes-related deaths among persons with diabetes from 8.8 deaths per 1000 people with diabetes to 7.8 deaths per 1000 people with diabetes.
7. Reduce deaths from cardiovascular disease in persons with diabetes from 343 deaths from cardiovascular disease per 100,000 persons with diabetes to 309 deaths per 100,000 persons with diabetes.
8. (Developmental) Decrease the proportion of pregnant women with gestational diabetes.
9. (Developmental) Reduce the frequency of foot ulcers in persons with diabetes.
10. Reduce the rate of lower extremity amputations in persons with diabetes from 4.1 lower extremity amputations per 1,000 persons with diabetes to 1.8 lower extremity amputations per 1,000 persons with diabetes per year.
11. (Developmental) Increase the proportion of persons with diabetes who obtain an annual urinary microalbumin measurement.
12. Increase the proportion of adults with diabetes who have a glycosylated hemoglobin measurement at least once a year from 24 percent to 50 percent.
13. Increase the proportion of adults with diabetes who have an annual dilated eye examination from 47 percent to 75 percent.
14. Increase the proportion of adults with diabetes who have at least an annual foot examination from 55 percent to 75 percent.
15. Increase the proportion of persons with diabetes who have at least an annual dental examination from 58 percent to 75 percent.
16. Increase the proportion of adults with diabetes who take aspirin at least 15 times per month from 20 percent to 30 percent.
17. Increase the proportion of adults with diabetes who perform self-blood-glucose-monitoring at least once daily from 42 percent to 60 percent.

American Diabetes Association Guidelines

Essential Diabetes Mellitus Care Guidelines rev. 4/2004

Care is a partnership between the patient, family and the diabetes team:
the primary care provider, diabetes educator, nurse, dietitian, pharmacist and other specialists.

Abnormal physical or lab findings should result in appropriate interventions.

For particular details and references for each specific area, please refer to the companion supporting documents.*

//journal.diabetes.org/FullText/Supplements/DiabetesCare/Supplement100

| Concerns | Care/ Test | Frequency |
|---------------------------------|---|---|
| General Recommendations | Diabetes focused visit. Use correct ICD9 coding on Type 1 or 2 Review Obesity issues and Mental Health Issues. Review screening neurosensory exam and ED. Review management plan, problems & goals..... | <i>Type 1</i> *: every 3 months <i>Type 2</i> *: every 3 - 6 months * or > often based on control & complications Each focused visit; revise as needed |
| Glycemic Control | Review meds & frequency of low blood sugar..... Self blood glucose monitoring, set & review goals..... HbA1C - [goal: < 7.0% or <= 1% above lab norms]..... [if HbA1c > 8.0%, action is recommended] Weight/BMI/Growth..... | Each focused visit 2 - 4 times/day or as recommended Every 3 - 6 months Each focused visit |
| Kidney Function | Urinalysis..... Urine for microalbumin: [if higher than 30 mg creatinine or > 30 mg/24 hours, initiate ACE inhibitor (unless contraindicated)] Creatinine clearance & protein..... | At diagnosis and yearly <i>Type 1</i> : Begin with puberty or after 5 yrs' duration, then yearly <i>Type 2</i> : At diagnosis, then yearly after microalbuminuria > 300mg/24 hour |
| Cardiovascular | Smoking..... Lipid profile..... adult goals: Triglycerides <150 mg/dL HDL > 40 mg/dL (men) >50mg/dL (women) LDL < 100 mg/dL (optimal goal) Blood pressure [adult goal: < 130/80] [children's goal: below 90% of ideal for age] Aspirin prophylaxis (unless contraindicated)..... Exercise/Diet/Weight Goals..... | Counsel to stop every visit <i>Children</i> : If > 2 years, after diagnosis & once glycemic control is established - repeat yearly if abnormal. Follow National Cholesterol Education Program (NCEP) guidelines. <i>Adults</i> : yearly. If abnormal, follow NCEP guidelines. Each focused visit Age > 30 years Each focused visit |
| Eye Care | Dilated eye exam by ophthalmologist or optometrist | <i>Type 1</i> : After 3-5 yrs' duration, then yearly <i>Type 2</i> : At diagnosis, then yearly |
| Foot Care | Inspect feet, with shoes and socks off..... Comprehensive lower extremity sensory exam..... | Each focused visit: stress need for daily self-exam Yearly |
| Pregnancy | Assess contraception/discuss family planning..... Preconception consult..... Management Review separate guidelines | At diagnosis & yearly during childbearing years 3 - 4 months prior to conception <i>Some medications (e.g., oral antidiabetic agents, ACE inhibitors, angiotensin II blockers, etc.) are contraindicated during pregnancy</i> |
| Self Management Training | By diabetes educator or clinician Curriculum to include the 15 key areas of the national standards for diabetes self-management education Review exercise program. Consider disease management program | At diagnosis, then every 6 - 12 months or more as indicated by the patient's status |
| Nutrition Therapy | By a dietitian or clinician To include areas defined by the American Dietetic Association's Nutrition Practice Guidelines | At diagnosis, then individualized as needed _____ _____ |
| Immunizations | Influenza vaccine..... Pneumococcal vaccine..... | Yearly for adults and children > 6 months At least one lifetime pneumococcal |

Members are responsible for selecting providers, services or products. All components of the guideline may not be covered for payment under a member's health plan. Health plans should be contacted for information regarding providers and services.

Glossary

Age-adjusted rate: A rate calculated in a manner that allows for the comparison of populations with different age structures.

Insufficient physical activity: Percentage of students who did not participate in at least 20 minutes of vigorous physical activity on three or more of the past seven days and did not do at least 30 minutes of moderate physical activity on five or more of the past seven days.

Ischemic Heart Disease: Disease of the heart characterized by local and temporary deficiency of blood supply due to obstruction of circulation.

Prevalence: The percent (proportion) of a population that has a disease or a risk factor at a given point in time.

Risk factor: A characteristic or behavior that is consistently associated with increased probability of disease or event.

BMI: A surrogate measure of body fatness expressed as weight (measured in kilograms) divided by height (measured in meters) squared.

Normal weight: Neither overweight nor obese (BMI < 25.0 but more than 18.5).

Overweight: BMI greater than or equal to 25.0 but less than 30.0.

Obese: BMI greater than or equal to 30.0.

Mortality rate: Death rate.

No physical activity: People who reported not being involved in any kind of physical activity or exercise in the past 30 days besides their regular job.

Limitations of the data presented in the report

It must be noted that in 1999, a new cause-of-death tabulation was developed in the form of ICD-10 (International Classification of Diseases) codes. Before 1999, the ICD-9 classification was used. There are differences in mortality rates between the two codes. In this document, however, no adjustments have been made in mortality rates with respect to ICD-9 and ICD-10 codes.

References

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