

SLIDE 1

Diabetes in the United States

- Prevalence (all ages)
 - 20.8 million people-7.0% of the population
 - Diagnosed: 14.6 million
 - Undiagnosed: 6.2 million
 - Type 2 diabetes accounts for over 90% of diabetes diagnosed cases
- Incidence
 - 1.5 million new cases diagnosed per year in people aged 20 years or older
- Total costs
 - Direct: \$92 billion
 - Indirect: \$40 billion*

*Work loss and premature mortality.

Centers for Disease Control and Prevention. National Diabetes Fact Sheet: General Information and National Estimates on Diabetes in the United States. 2005. Available at:
<http://www.cdc.gov/DIABETES/pubs/estimates05.htm#prev>

LECTURE NOTES SLIDE 1

The prevalence of diabetes in the United States general population is 7.0%, or 20.8 million people. Each year, 1.5 million new cases are diagnosed in people aged 20 years or older. Type 2 diabetes accounts for more than 90% of diabetes diagnosed cases (National Diabetes Education Program, 2005). The total cost attributed to diabetes is \$132 billion. Direct costs are responsible for \$92 billion. Indirect costs, such as work loss and premature mortality, are responsible for \$40 billion (CDC - National Diabetes Fact Sheet 2005).

References

Centers for Disease Control and Prevention. National Diabetes Fact Sheet: General Information and National Estimates on Diabetes in the United States. 2005. Available at:
<http://www.cdc.gov/DIABETES/pubs/estimates05.htm#prev>

Adapted from National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Statistics fact sheet: general information and national estimates on diabetes in the United States, 2005. Bethesda, MD: U.S. Department of Health and Human Services, National Institute of Health, 2005. Updated November 2005

SLIDE 2

Total prevalence of **diabetes** by race/ethnicity among people in the United States

African-American

- Prevalence (20 years or older)
 - 3.2 million people-13.3 % of the African-American population

Caucasian

- Prevalence (20 years or older)
 - 13.1 million people-8.7% of the Caucasian population

Centers for Disease Control and Prevention. National Diabetes Fact Sheet: General Information and National Estimates on Diabetes in the United States. 2005. Available at:
<http://www.cdc.gov/DIABETES/pubs/estimates05.htm#prev>

LECTURE NOTES SLIDE 2

Prevalence

The prevalence of diabetes varies between race/ethnicity groups. In African-Americans, the prevalence of diabetes in people aged 20 years or older is 13.3%, or 3.2 million people. Compare this to the prevalence of diabetes in Caucasians, which is 8.7% (CDC - National Diabetes Fact Sheet 2005). According to the Atherosclerosis in Communities Study, the incidence of diabetes was 1.5-fold greater in African-American men and 2.4-fold greater in African-American women, compared to Caucasians. (Watson; Pathobiology- 2004). In addition, the prevalence of metabolic syndrome in African-Americans was 16% for men and 26% for women (primarily the result of obesity) (Watkins; Perspectives- 2004).

References

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SLIDE 3

Total prevalence of **diabetes** by race/ethnicity among people in the United States
Hispanic/Latino

- Prevalence (20 years or older)
 - 2.5 million people-9.5 % of the Hispanic/Latino population*
- *Extrapolated from prevalence in Mexican Americans

	Diabetes Prevalence	
African-Americans	13.3%	3.2 million
Hispanics	9.5%	2.5 million
Caucasians	8.7%	13.1 million

Table: Diabetes in African-Americans, Hispanics, and Caucasians (20 years or older)

Centers for Disease Control and Prevention. National Diabetes Fact Sheet: General Information and National Estimates on Diabetes in the United States. 2005. Available at:
<http://www.cdc.gov/DIABETES/pubs/estimates05.htm#prev>

LECTURE NOTES SLIDE 3

Prevalence

From the table, it is clear that the prevalence of diabetes is different among race/ethnic groups. The total prevalence of diabetes in the Hispanic/Latino population in people 20 years or older is estimated to be 9.5%, or 2.5 million people. Specific data on the Hispanic/Latino population is not available. However, in the Mexican American subgroup the risk of having diabetes is 1.7 times higher than in Caucasians, leading to an estimate of 9.5 % in the Hispanic/Latino population. Compare this prevalence to that of Caucasians, in which the prevalence is 8.7% (CDC Fact Sheet 2005). For Hispanics, the problem is significant, simply as a result of the absolute percentage of Hispanics among the United States population, which was 12.5% and increasing, according to the 2000 census (CDC 2004).

	Diabetes Prevalence	
African-Americans	13.3%	3.2 million
Hispanics	9.5%	2.5 million
Caucasians	8.7%	13.1 million

Table: Diabetes in African-Americans, Hispanics, and Caucasians (20 years or older)

References

Centers for Disease Control and Prevention. National Diabetes Fact Sheet: General Information and National Estimates on Diabetes in the United States. 2005. Available at:
<http://www.cdc.gov/DIABETES/pubs/estimates05.htm#prev>

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SLIDE 4

Cardiovascular Disease

Age-adjusted prevalence of any cardiovascular disease (by self-report) according to race/ethnicity in persons with diabetes, age 35 years or older (2003)

African-American

- Prevalence
 - 31.3 % for men in the African-American population
 - 28.9% for women in the African-American population

Caucasian

- Prevalence
 - 38.7% for men in the Caucasian population
 - 30.7% for women in the Caucasian population

Centers for Disease Control and Prevention. Data and Trends. National Diabetes Surveillance System. Prevalence of Cardiovascular Disease. 2005. Available at: <http://www.cdc.gov/DIABETES/statistics/cvd/fig5.htm>

LECTURE NOTES SLIDE 4

General

In general, people in the United States with Type 2 diabetes have an increased prevalence of dyslipidemia that contributes to higher rates of cardiovascular disease (ADA 2006). In fact, among people with diabetes, heart disease and stroke account for approximately 65% of deaths (National Diabetes Fact Sheet 2005). The estimated costs attributed to cardiovascular disease and stroke is \$403 billion for the year 2000 (Thom 2006).

Prevalence

The age-adjusted prevalence of any self-reported cardiovascular disease condition among persons with diabetes, 35 years or older, varies by race/ethnicity and sex.

In African-Americans, the prevalence of cardiovascular disease among men was 31.3%, and among women the prevalence was 28.9%. In contrast, the prevalence of cardiovascular disease among Caucasian men was 38.7%; among Caucasian women the prevalence was 30.7% (CDC-Prevalence of Cardiovascular Disease 2005). Among African-Americans, coronary heart disease mortality is higher, and declines have been smaller compared to Caucasians (Nelson 2006). Moreover, the problem in African-Americans is worsening. The gap between African-Americans and other groups is increasing for coronary heart disease morbidity and mortality (Watson; Closing- 2004). In addition, type 2 diabetes and insulin-resistant diabetes (metabolic syndrome) are increasingly

associated with cardiovascular disease morbidity and mortality (Ferdinand 2004).

Differences in the Biology of Atherosclerosis

Increased outcomes related to type 2 diabetes and metabolic syndrome with dyslipidemia and hypertension, are likely to be related to undertreatment of hypoglycemia. However, it is probable that controlling hypertension, thrombotic factors, and dyslipidemia are more crucial (Ferdinand 2004). In fact, most of the standard coronary heart disease risk variables act differently in African-Americans with regard to efficacy, prevalence, and treatment. As a result, accuracy of standard prediction algorithms may be affected (Wilson; Framingham- 2004).

Variability in Lipid Profiles

Although African-Americans appear to have a more favorable lipoprotein profile, including 10-20% higher HDL levels compared with Caucasians, this profile does not seem to protect against increased prevalence of coronary heart disease in African-Americans. Another lipid particle with significant racial variability is lipoprotein (a), which is an independent risk factor for coronary heart disease in Caucasians; levels of this lipoprotein are more than two-fold higher in African-Americans. A significant association was found between elevated levels of lipoprotein (a) in conjunction with small apo(a) isoforms and coronary heart disease (Watson; Pathobiology- 2004).

Inflammatory Biomarkers

It has also been proposed that increased inflammation in African-Americans might promote plaque disruption, leading to more acute coronary events (Watson; Pathobiology- 2004). In addition, increased C-reactive protein levels are associated with African-Americans, as well as Mexican American children, and may play a role in acute coronary events. Of interest is the fact that statins have demonstrated anti-inflammatory effects, which could play an important role in people with elevated inflammatory biomarkers (Albert; Inflammatory- 2004).

References

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SLIDE 5

Cardiovascular Disease

Age-adjusted prevalence of any cardiovascular disease (by self-report) according to race/ethnicity in persons with diabetes age 35 years or older (2003)

Hispanic

- Prevalence
 - 29.9% for Hispanic men
 - 23.7% for Hispanic women

	Cardiovascular Disease Prevalence	
	Men	Women
African-American	31.3%	28.9%
Hispanic	29.9%	23.7%
Caucasian	38.7	30.7%

Table: Cardiovascular Disease in persons with diabetes among African-Americans, Hispanics, and Caucasians (35 years or older)

Centers for Disease Control and Prevention. Data and Trends. National Diabetes Surveillance System. Prevalence of Cardiovascular Disease. 2005. Available at: <http://www.cdc.gov/DIABETES/statistics/cvd/fig5.htm>

LECTURE NOTES SLIDE 5

Prevalence

In Hispanics, the prevalence of cardiovascular disease among persons with diabetes, 35 years or older, was 31.3% for men, and 28.9% for women (CDC - Prevalence of Cardiovascular Disease 2005). Although the death rate from coronary heart disease is decreasing among Hispanics, the rate of decline in mortality has been smaller in degree among Hispanics, compared to Caucasians (Nelson 2006).

From the table, is clear that the interplay of diabetes, dyslipidemia, and cardiovascular disease affects race/ethnicity groups differently. In general, age-adjusted prevalence of cardiovascular disease in people with diabetes (35 years or older) was greatest among Caucasian men and lowest among Hispanic women (CDC - Prevalence of Cardiovascular Disease).

	Cardiovascular Disease Prevalence	
	Men	Women
African-American	31.3%	28.9%
Hispanic	29.9%	23.7%
Caucasian	38.7	30.7%

Table: Cardiovascular Disease in persons with diabetes among African-Americans, Hispanics, and Caucasians (35 years or older)

Treatment Practices

The reasons for these disparities are still not clear. However, several trends in treatment may

contribute to the underlying causes. For example, treatment practices differ between ethnic/race groups. Studies have found that Mexican Americans, as well as African-Americans, were less likely to report any screening for high cholesterol. In addition, Mexican Americans and African-Americans who were told to take prescription medication were less likely to be actually taking a cholesteryl-lowering agent. Overall, Hispanics and African-Americans receive less aggressive treatment for coronary heart disease compared to Caucasians (Nelson 2006).

References

Centers for Disease Control and Prevention. Data and Trends. National Diabetes Surveillance System. Prevalence of Cardiovascular Disease. 2005. Available at:
<http://www.cdc.gov/DIABETES/statistics/cvd/fig5.htm>

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