

The Increasing Incidence of Diabetes in the 21st Century

David C. Klonoff, M.D., FACP

In the October 31, 2008 issue of *Morbidity and Mortality Weekly Report*, Centers for Diseases and Prevention (CDC) reported that the incidence of new onset diagnosed diabetes in U.S. adults has increased by 90% over the past decade.¹ An assessment of the geographic distribution of newly diagnosed diabetes on a state-by-state basis was realized through the use of Behavioral Risk Factor Surveillance System (BRFSS) surveys for the periods 1995–1997 and 2005–2007. Among the 33 states that participated during both time periods, the age-adjusted incidence of diabetes increased 90%, from 4.8 per 1000 in 1995–1997 to 9.1 in 2005–2007.

The number of incident cases of diagnosed diabetes was defined as cases with duration of zero full years plus one-half of the cases with duration of 1 year. Incidence rates were calculated by dividing the number of incident cases by the number of persons without diabetes plus the number of incident cases. The calculated incidence was adjusted for age with 2000 U.S. census population data according to each state.

The BRFSS is a state-based, random digit-dialed, landline telephone survey of the U.S. civilian noninstitutionalized population.² More than 350,000 adults are interviewed each year, making the BRFSS the largest telephone health survey in the world. This collaborative project of CDC and U.S. states and territories is a data collection program for measuring behavioral risk factors in the adult

population. BRFSS field operations are managed by state health departments, which adhere to guidelines developed by CDC. The BRFSS was initiated in 1984, with 15 states collecting surveillance data on risk behaviors through monthly telephone interviews. Eventually, the number of states participating in the survey increased, and by 2001, all 50 states, as well as the District of Columbia, Puerto Rico, Guam, and the Virgin Islands, were participating in the BRFSS. State health departments either conduct the BRFSS interviews themselves or else outsource the work to contractors. Data are transmitted to the CDC's National Center for Chronic Disease Prevention and Health Promotion's Behavioral Surveillance Branch to be processed and analyzed. States use BRFSS data to identify emerging health problems, track health objectives, and evaluate public health programs. The objective of the BRFSS is to collect state-specific data on chronic diseases and other conditions in adults. Data are collected from a random telephone survey of adults.

Since 2005, the incidence of newly diagnosed diabetes has been particularly high in the South. In fact, half of the new cases of diabetes between 2005 and 2007 were in patients who lived in 11 southern states (Alabama, Arkansas, Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia). The three states with the greatest absolute number of new cases per year during the period of 2005–2007 were Sunbelt states. These states were

Author Affiliation: Mills-Peninsula Health Services, San Mateo, California

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Corresponding Author: David C. Klonoff, M.D., FACP, Mills-Peninsula Health Services, 100 South San Mateo Drive, Room 3124, San Mateo, CA 94401; email address dklonoff@yahoo.com

California, Texas, and Florida, with 208,000, 156,000, and 139,000, respectively, new cases of diabetes annually. This distinction for these three states was due to a combination of their large populations and high incidences of new onset diabetes.

If all the new patients with diabetes were assigned to freshly minted board-certified endocrinologists and if an endocrinologist can handle a case load of 1000 patients with diabetes, then these three states together would have required an annual influx of 400 endocrinologists during each of the past 3 years. This is a problem because in the entire United States there are approximately 160 new board-certified endocrinologists entering the workforce each year and many of them go into industry, research, teaching, or administration and do not see patients.³ As more Americans develop diabetes, the likelihood that they can be cared for by a board-certified endocrinologist diminishes for all Americans with diabetes because this rising number of patients is not matched by a rising number of highly trained physicians specializing in this disease.

In some states, the increase in the rate of new cases of diabetes increased markedly over the past decade. The age-adjusted incidence of diabetes tripled over the past decade in Idaho, Florida, and Texas. This trend likely reflects migration into these states of people at higher than average risk of developing diabetes or else a rapidly deteriorating quality of life in these states such that preventive behavior is becoming more difficult to achieve.

Obesity is a major risk factor for developing type 2 diabetes, which is the type of diabetes affecting 90–95% of Americans. The increasing incidence of diabetes is in line with the increasing prevalence of obesity in the United States. A 25.6% prevalence of obesity was noted in the most recently reported BRFSS survey, which occurred in 2007. This prevalence was up sharply from previously determined prevalence rates for obesity in the United States, which were 23.9% in 2005, 19.8% in 2000, and 15.3% in 1995.⁴

A *Healthy People 2010* objective is to reduce to 15% the proportion of adults who are obese.⁵ Results of a BRFSS survey for obesity in 2007 indicated that 25.6% of respondents were obese. In this survey, the prevalence of obesity among adults was above 15% in every state and was above 30% in the three states with the highest prevalence of obesity, namely Alabama, Mississippi, and Tennessee.

The rising prevalence of obesity is clearly responsible for the rising incidence of diabetes. Personalized medicine for diabetes diagnostic programs and laboratory biomarker panels are currently being developed to identify individuals who are at the highest risk of developing type 2 diabetes. These people can then be monitored more closely and encouraged to modify their lifestyle.⁶ From a public policy perspective, the high costs of diabetes mandate that population programs must be initiated now to combat obesity by encouraging increased physical activity and weight loss for all obese and sedentary people.⁷

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