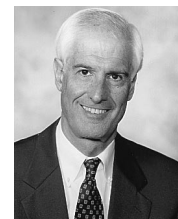


ACC NEWS

President's Page: The Epidemic of Type 2 Diabetes and Obesity in the U.S.: Cause for Alarm

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Diabetes mellitus affects an estimated 100 million people worldwide, and its prevalence is increasing (1). The prevalence of type 2 diabetes was 7.8% among U.S. adults from 1988 to 1994 (2). According to a Centers for Disease Control and Prevention (CDC) study (3), the number of Americans diagnosed with type 2 diabetes jumped an astounding 33% overall between 1990 and 1998, from 4.9% of the population to 6.5%. Since many cases go undiagnosed, the actual number of cases was probably higher. This increased incidence of diabetes will surely slow the age-adjusted decline in coronary artery disease incidence in the U.S.

Even more startling is the fact that the disease is striking at ever-earlier ages. Indeed, the CDC study found that Americans in their 30s had an almost 70% increase in their diabetes rates—the largest increase of any age group (3). Today, children as young as eight are being diagnosed with type 2 diabetes (4). Especially disturbing, noted Dr. Richard Kahn, is that type 2 diabetes was virtually unheard of in children just a decade ago, and now as many as 300,000 children have it. Dr. Kahn was part of a consensus panel of the American Academy of Pediatrics and American Diabetes Association, which early this year issued recommendations concerning the prevalence of diabetes among children. The panel noted that type 2 diabetes is an “emerging epidemic” among children (5).

The changing demographics of the disease are also reflected in its name. Once called “adult-onset diabetes” because of its tendency to strike in middle age or later, the disease is now known simply as “type 2 diabetes” to distinguish it from the entirely different disease once called “juvenile diabetes” and now known as “type 1 diabetes.” As endocrinologist Dr. Arthur Rubenstein of Mount Sinai School of Medicine recently told *Newsweek*, diabetes “is becoming a disease of the young” (6).

Clearly Dr. Rubenstein and other endocrinologists will have their work cut out for them in coming years, but so will cardiovascular specialists. Diabetes doubles men’s chances of developing heart disease and quadruples women’s risk (6). Diabetics have a two to three times greater risk of death after myocardial infarction (7), and cardiovascular disease is the number-one cause of death among people with diabetes.

Of course, people with diabetes are more likely than nondiabetics to suffer from obesity, hypertension, and other factors that would put anyone at risk of developing coronary

heart disease (7). However, those risk factors account for less than half of the excess mortality associated with diabetes. A consensus document published by the American College of Cardiology and the American Diabetes Association recently confirmed what physicians have long known: diabetes is itself an independent and potent risk factor for cardiovascular disease (7).

LIFESTYLE AND OBESITY

What is behind the soaring diabetes rates? Although genetic factors play a role, experts suspect that the main culprits are sedentary lifestyles and poor diets. According to the Surgeon General’s 1996 report on physical activity and health, 60% of American adults are not physically active on a regular basis (8). Even worse, a full quarter of adults aren’t active at all. *Morbidity and Mortality Weekly Report* noted in 1997 that, in addition to diabetes, physical inactivity is linked to an increased risk for heart disease, colon cancer, hypertension, obesity, osteoporosis, muscle and joint disorders, and symptoms of anxiety and depression (9).

Those sedentary habits are being passed on to the next generation of Americans. Almost half of young people ages 12 to 21 fail to engage in vigorous activity on a regular basis, the Surgeon General’s report (8) revealed, and activity levels decline dramatically during adolescence. Schools aren’t doing much better than parents when it comes to instilling healthy exercise habits. *The New York Times* reported that one in four children gets no physical education in school, and Illinois is the only state that requires daily physical education for all children (10). High school students’ enrollment in daily physical education classes plummeted from 42% in 1991 to 25% by 1995 (8).

In addition to sedentary lifestyles, Americans have also become accustomed to bigger, less healthy meals. Although Americans have managed to reduce their fat consumption—from 42% of their diet 30 years ago to 34% today—they still eat far too much sugar and processed foods (11). Diabetes specialist Dr. Sanford Garfield of the National Institutes of Health calls it the “McDonald’s syndrome” (4).

These sedentary lifestyles and poor diets have resulted in an epidemic of obesity. Only 12% of Americans were considered obese in 1991; by 1998, that number had climbed to 20% (3). Similarly, the percentage of Americans considered overweight increased from 44% to 54%. The

CDC has reported that, together with physical inactivity, overweight accounts for more than 300,000 premature deaths every year in the U.S. (12).

Of great concern is the fact that 1 in 10 American children is now obese (13). Reporter Jane E. Brody (10) of *The New York Times*, has written that today's U.S. children are "fatter than ever and less fit than they were in the 1960s." In another *Times* article (14), Dr. Richard S. Strauss, of the Robert Wood Johnson School of Medicine, attributes the epidemic of obesity largely to inactivity. "We found that for about 10 hours of the day they're basically doing nothing," Dr. Strauss said. "And what we call vigorous activity—moving faster than three and a half miles an hour—that was on average 12 minutes a day." Other researchers have noted that the average child in the six- to eleven-year age range watches 25 h of television per week (10). Meanwhile, a study of 192 elementary school students in San Jose, California, found that children who reduced time watching television and playing video games lost a significant amount of body fat in just six months (15).

Another important point of concern is that fat children may grow up to be fat adults, therefore more prone to the conditions that plague obese adults—diabetes, hypertension, and arthritis, for example (14). A study by Dr. Robert Whitaker (14,16), a pediatric obesity expert at Children's Hospital Medical Center in Cincinnati, found that children who were obese at six to nine years old had a 55% chance of becoming obese adults; the percentage climbed to 67% for obese 10- to 14-year-olds.

Affecting both children and adults is that fact that, as people gain weight, they are more likely to develop diabetes. In the CDC study, 13.5% of the obese patients had diabetes, compared with only 3.5% of those with normal weight (6).

Consider the work of Dr. Alan Shuldiner of the University of Maryland, who has compared Amish families in Pennsylvania with other white Americans (6). Although Amish adults are just as likely to be fat and eat unhealthy food as other Americans, they have about half the rate of diabetes found among other whites. The difference may be that they forgo cars, televisions, computers, and other devices that encourage a sedentary lifestyle.

It is especially worrisome that overweight and obesity are becoming so prevalent that the public, and even health care professionals, are becoming inured to these conditions, as noted in *The New York Times*, where writer Gina Kolata (14) quoted an assistant professor of pediatrics and medicine at Stanford University: "Ten, 15 years ago, the people who were showing up for treatment were 40 percent overweight," Dr. [Thomas] Robinson said. Now, he said, the children he treats are averaging 80 percent overweight . . ."

THE ROLE OF CARDIOVASCULAR SPECIALISTS

As cardiovascular specialists know, diabetes can wreak havoc on the cardiovascular system. High blood-sugar levels dam-

age the arteries, for example, weakening capillary walls and causing microvascular damage (6). Fully half of all diabetics have already suffered serious damage to the heart and other organs by the time they finally receive a diagnosis (4). Insulin resistance and compensatory hyperinsulinemia are major pathogenetic factors for atherosclerotic cardiovascular disease.

All physicians—whether they're cardiologists, pediatricians, or endocrinologists—have a responsibility to keep cardiovascular complications from developing. Although various drugs can help control type 2 diabetes, convincing patients to get regular exercise and eat a healthy diet is crucial. Prevention of obesity by diet and regular physical activity is particularly important for children and adolescents.

The Surgeon General recommends that all Americans engage in moderate physical activity, such as a half hour of brisk walking or leaf raking, on most days. Exercising longer or more vigorously further reduces the chances of diabetes, coronary heart disease, and other causes of early death. Physicians should also urge their patients to follow the dietary guidelines issued by the Department of Agriculture and Department of Health and Human Services. Sensible portions and reduced fat, salt, and sugar intake are key (13).

With the Nurses' Health Study, Stampfer et al. (17) have shown that middle-aged women who maintained an appropriate weight, ate a healthy diet, exercised a half hour a day, and avoided cigarettes and excess alcohol consumption enjoyed 80% fewer coronary events than other women. But even small changes can make a big difference. Researchers in Finland have found (18) that losing as little as 10 pounds can be enough to ward off diabetes. In the study, Tuomilehto et al. found that beginning a moderate exercise program, eating healthier, and losing only 10 pounds, or less, over a year cut high-blood-sugar patients' chances of developing full-blown diabetes by 58%. Reductions in weight of even 5% to 10% can substantially improve blood pressure, lipid levels, and glucose tolerance and decrease the incidence of both diabetes and hypertension (19).

Even more important, physicians need to start prevention efforts early. By encouraging active lifestyles and healthy diets, physicians can help patients avoid obesity and diabetes and, ultimately, cardiovascular disease. Physicians must take the time to counsel patients about increasing their physical activity and to communicate persuasively the benefits of regular exercise, particularly to women, racial and ethnic minorities, and members of lower socioeconomic groups, who are at increased risk for obesity (20).

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