



# The Effects of Obesity and Overweight on Health

## Monitoring for BMI at Every Visit

by Jason Lebowitz, 2012 PharmD Candidate; Michael Pazirandeh, 2011 PharmD Candidate; Craig Stern, PharmD, MBA

### Introduction

**D**iabetes is one of the single-most prevalent consequences of obesity. It presents itself in today's population as a micro vascular disease leading to cardiovascular, kidney, and eye diseases. While some of the risk factors can be treated with medications, obesity provides a separate and independent risk factor for cardiovascular morbidity and mortality that cannot be sufficiently treated with medications.

Education, exercise, and proper nutrition all contribute to the therapeutic regimen for obesity, but ultimately the patient is in control of this risk factor and must bear the consequences. Pharmacist counseling can make a significant impact on patient

outcomes. The following discussion addresses the epidemiologic problem and the evidence behind the need to treat obesity separately.

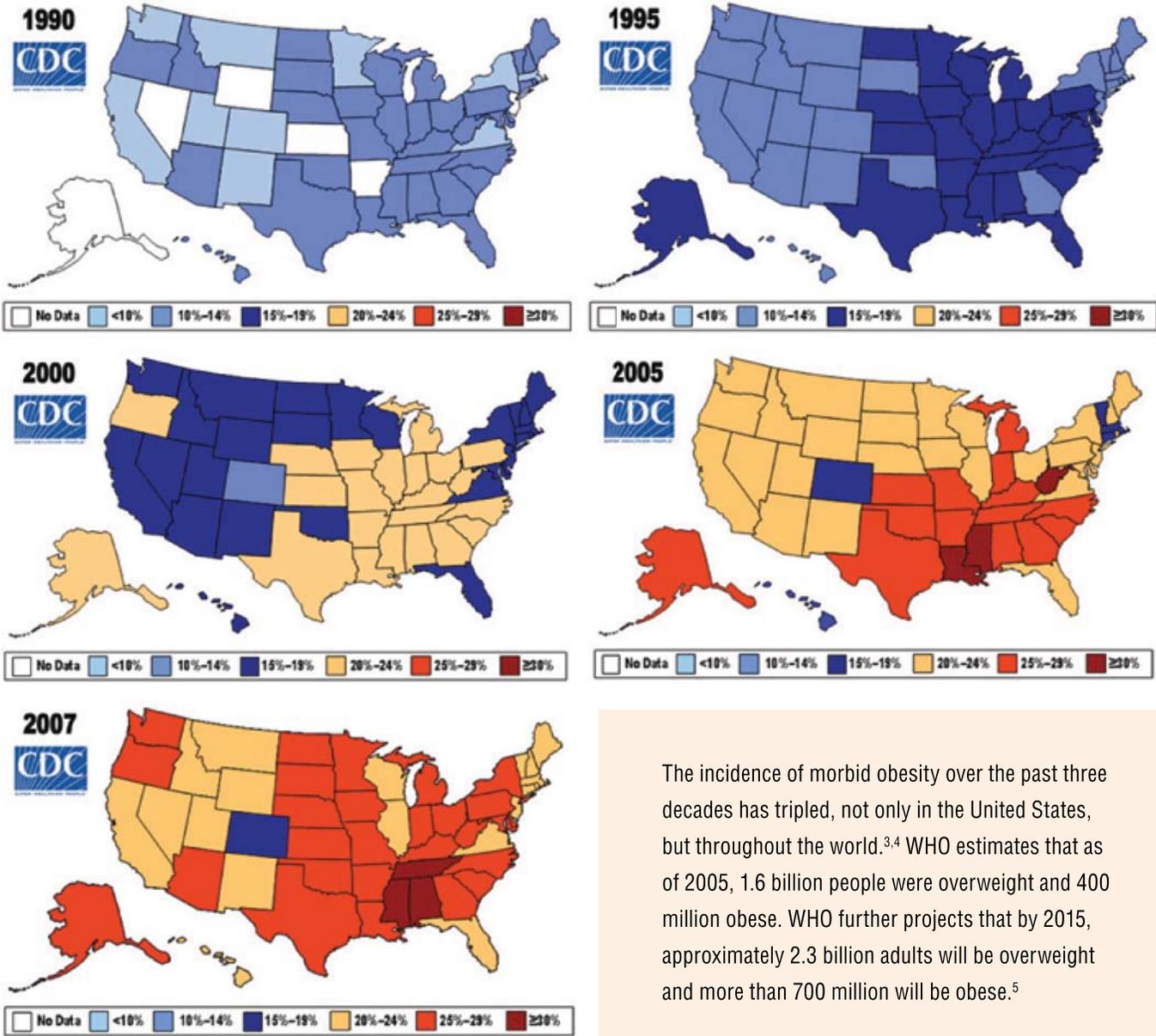
### Definitions

The World Health Organization (WHO) defines obesity as abnormal or excessive fat accumulation that presents a risk to health. One of the simplest ways to assess and measure obesity is through the body mass index (BMI). It is calculated by taking the patient's weight in kilograms and dividing by the square of his or her height in meters (N.B. One can use weight in pounds, height in inches squared, and multiply by a conversion factor of 703). A BMI between 25-29.9 is classified as overweight and a BMI >30 is classified as obese.

Patients should be assessed for a BMI less than 25 as part of every physical evaluation.<sup>1</sup>

Another observational technique to measure obesity is done by taking the waist circumference of the patient. This approach takes into consideration abdominal fat content, which has been proven to be an independent risk factor for many ailments. A waist circumference measurement of greater than 40 inches in men and 35 inches in women is considered risky.<sup>2</sup> An alternative rule of thumb is to measure the waist-to-hip ratio. If the ratio is greater than 1 to 1 in men, or 0.85 to 1 in women, then this signals visceral fat. Visceral fat is a risk factor for diabetes, hypertension, and heart disease.<sup>2,13</sup>

## Percent of Obese (BMI > 30) in U.S. Adults



The incidence of morbid obesity over the past three decades has tripled, not only in the United States, but throughout the world.<sup>3,4</sup> WHO estimates that as of 2005, 1.6 billion people were overweight and 400 million obese. WHO further projects that by 2015, approximately 2.3 billion adults will be overweight and more than 700 million will be obese.<sup>5</sup>

### Progression in the General Population

The progression of obesity in the United States is alarming. The graphic above tells the story of a progressive and wide ranging impact of obesity on the population. Essentially, within ten years the prevalence has increased from approximately 14% of the population of the U.S. in 1995 to about 26% in 2007.

These figures reflect changes in societies across the globe and indicate increases

in daily caloric intake without increases in physical activity to offset the added consumption. According to the WHO, “economic growth, modernization, urbanization, and globalization of food markets” are among the culprits behind this epidemic. Workforce automation and increased utilization of computers on the job produces less physically demanding jobs. In the home, accessories designed for convenience are more popular than ever before. In the meantime, high-calorie food is more accessible to the general public.<sup>6</sup>

According to the International Association for the Study of Obesity, the prevalence of overweight in most European countries among men and women has reached a level of over 50% and 40%, respectively.<sup>7</sup>

Among U.S. adults 20 to 74 years old, the prevalence of obesity increased from 15% to 32.9% during the 1976 to 2004 time period. Among children 6 to 19 years old, the prevalence of overweight has increased from ~5% to ~18%. Obesity and overweight pose a major risk for many

chronic diseases, including type 2 diabetes, cardiovascular disease, hypertension, stroke, GERD, erosive esophagitis, and certain forms of cancer. Even though the number of obese patients has been increasing greatly over the years, only 43% of obese persons are advised to lose weight during routine checkups. The prevalence of obesity and overweight has reached pandemic proportions and is rapidly increasing in both industrialized and developing nations.

### Health Consequences

While most healthcare providers appreciate the clinical consequences of obesity and overweight, there is a lack of awareness that obesity, particularly central obesity, is an **independent** risk factor for cardiovascular-associated morbidity and mortality. This means that while medications may be prescribed to treat the more “well-recognized” risk factors (hypertension, high cholesterol, diabetes), overweight or obese patient remain at **increased risk** for cardiovascular (CVD) complications without **adequate weight loss**.

In fact, obese patients, compared with those of normal weight in the same cardiovascular risk category, are **1.5 to 2 times as likely** to die from coronary heart disease. (Odds ratios: 1.43 for low risk and 2.07 for moderate risk.) In a 26-year follow up of participants in the Framingham Heart Study, researchers found that the severity of obesity can serve as a long-term, independent predictor of CVD incidence.<sup>8</sup> A second study on Framingham participants found that patients who weigh 140–160% of their ideal body weight have a rate of premature death that is double that of similar normal-weight individuals.<sup>9</sup>

Studies show that the prevalence of disease, in general, is higher among obese individuals. For example, the health consequences and proportion of disease prevalence attributable to obesity is as follows:

Disease	Prevalence	Disease	Prevalence
<b>Type 2 Diabetes</b>	61%	Hypertension	17%
Uterine Cancer	34%	<b>Coronary Heart Disease</b>	17%
Gallbladder Disease	30%	Breast Cancer	11%
Osteoarthritis	24%	Colon Cancer	11%

In addition to cardiovascular risks, studies have shown obesity to be an independent risk factor in the development of GERD, erosive esophagitis, and caesarian section. In one study, researchers found that obese patients have a two-fold increase for the development of GERD (p=0.0011) and a two to four-fold increase for the development of erosive esophagitis (p=0.0145).<sup>10</sup> Another study showed that 27.8% of obese mothers underwent a caesarian section, which has been associated with more complications, compared to 10.8% in non-obese mothers (p< 0.0001).<sup>11</sup> Even though these studies have shown statistically significant data for obesity as an independent risk factor for GERD, erosive esophagitis, and caesarian section, more studies must be done to confirm these findings.

### Economic Benefits

There are also economic benefits that have been associated with weight loss. A study with 45,125 primary care attendees showed that obese patients respond poorly to hypertension treatment and require multiple medications to reach goal.<sup>12</sup> Medication costs are cut in half for people taking anti-hypertensives or diabetes medications once they have lost and kept 20 pounds off for one year.<sup>14</sup> In addition, those that participate in a weight-management program can reduce overall health care costs by \$1,648 annually.<sup>15</sup> Furthermore, a correlation was found between obesity and the number of sick days taken from work.<sup>16</sup> In the United States, the difference was one to three extra sick days for obese workers. In Europe, the difference was about 10 days. This decrease in productivity in the workforce can be reversed with the reduction of weight in obese patients.

### Prescription for Action

As a healthcare provider, you have the professional responsibility to assess and educate your patient on obesity. You have the ability to make a difference by empowering your patients to live healthier lives. Educate your patients about the importance of weight loss

without a prescription. Teach them how to live a heart-healthy lifestyle and about the numerous health benefits a nutritious diet and regular exercise can provide. One of the first goals of assessing an obese patient is deciding whom to treat. Three main issues must be considered: whether treatment is indicated, whether treatment is safe for the patient, and whether the patient is ready and motivated to lose weight. ☺

### Prescription for every patient: Monitor for BMI at Every Visit.

*If BMI >25, then provide intensive education and monitor weight at every visit.*

### About the Authors

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