

Why lose weight?

Americans have been flooded with newspaper and magazine articles as well as television news stories about obesity and diabetes. By now many people are aware that there is an increasing incidence of obesity in the U.S. The latest data from the National Center for Health Statistics show that 30 percent of U.S. adults 20 years of age and older—over 60 million people—are obese. The prevalence of overweight among children and adolescents has also risen alarmingly over the past three decades. National Health and Nutrition Examination Survey (NHANES) data over the past 30 years has indicated the prevalence of overweight in 6-11 year-olds has almost quadrupled and the prevalence in 12-19 year-olds has increased 2.5 fold. The most recent 1999-2000 NHANES data estimates that 15 percent (almost nine million) children and adolescents ages 6-19 are overweight. The 1999-2000 findings for children and adolescents suggest the likelihood of another generation of overweight adults who may be at increased risk for obesity, as well as related cardiovascular disease and type 2 diabetes.

Being overweight or obese and leading a sedentary lifestyle are some of the leading risk factors for developing type 2 diabetes, and nine out of 10 people newly diagnosed with type 2 diabetes are overweight. The body mass index (BMI) chart on the next page can be used to determine whether a person is overweight or obese. Individuals who are overweight have a BMI of 25.0-29.9, while those with a BMI greater than or equal to 30 are considered obese. While the BMI chart is used by many researchers and clinicians, there are some who feel it does not accurately predict the likelihood of developing a disease since abdominal obesity (fat deposited in the abdomen around the organs) has been shown to be a better indicator of disease risk. Therefore, waist circumference has become another useful indicator of obesity. Men with a waist circumference greater than 40 inches and women with a waist circumference greater than 35 inches are considered obese and, as one recent study showed, are at greater risk for cardiovascular disease. Unlike other diabetes risk factors like genetics or age, a person's weight and activity level are two factors that may be possible to control. Because of that, we are seeing an increased research focus on obesity, diet and exercise.

The recently completed Diabetes Prevention Program (DPP) was a major clinical trial funded by the National Institutes of Health, National Institute of Diabetes & Digestive & Kidney Diseases with support from the American Diabetes Association. The purpose of the study was to discover whether diet and exercise or the oral diabetes medication, metformin (Glucophage), could prevent or delay the onset of type 2 diabetes in people with impaired glucose tolerance (IGT). IGT, also called impaired fasting glucose (IFG) or "pre-diabetes," is a condition in which blood glucose levels are higher



Weight in Pounds

	120	130	140	150	160	170	180	190	200	210	220	230	240	250
4'6"	29	31	34	36	39	41	43	46	48	51	53	56	58	60
4'8"	27	29	31	34	36	38	40	43	45	47	49	52	54	56
4'10"	25	27	29	31	34	36	38	40	42	44	46	48	50	52
5'0"	23	25	27	29	31	33	35	37	39	41	43	45	47	49
5'2"	22	24	26	27	29	31	33	35	37	38	40	42	44	46
5'4"	21	22	24	26	28	29	31	33	34	36	38	40	41	43
5'6"	19	21	23	24	26	27	29	31	32	34	36	37	39	40
5'8"	18	20	21	23	24	26	27	29	30	32	34	35	37	38
5'10"	17	19	20	22	23	24	26	27	29	30	32	33	35	36
6'0"	16	18	19	20	22	23	24	26	27	28	30	31	33	34
6'2"	15	17	18	19	21	22	23	24	26	27	28	30	31	32
6'4"	15	16	17	18	20	21	22	23	24	26	27	28	29	30
6'6"	14	15	16	17	19	20	21	22	23	24	25	27	28	29
6'8"	13	14	15	17	18	19	20	21	22	23	24	25	26	28

Underweight
 Healthy Weight
 Overweight
 Obese

Note: This chart is for adults (≥ 20 years old)

than normal (110-125 mg/dL) but not high enough for a diagnosis of diabetes (126 mg/dL or higher). Results of the DPP study showed that losing even a small amount of weight (five to seven percent of body weight) through diet and exercise can reduce the risk of developing

diabetes by approximately 58 percent across all age and ethnic groups, and the results for older study participants were even more striking with the risk of diabetes reduced by 71 percent. Study participants who received metformin had a 31 percent reduced risk of developing diabetes, however metformin was shown to be most effective in younger individuals age 25–44 years who were at least 60 pounds overweight.

Obesity can also contribute to a disorder called the “metabolic syndrome.” Also known as “insulin resistance syndrome” or “syndrome X,” the metabolic syndrome is a combination of metabolic problems including obesity, high blood pressure and high cholesterol levels, which can lead to hardening of the arteries, cardiovascular disease and kidney disease. There is some controversy surrounding the precise definition of metabolic syndrome. While the American Diabetes Association does not endorse one specific definition, there are some organizations and clinicians that do use the criteria developed by the National

Heart, Lung and Blood Institute’s Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). Known as the ATP III criteria, this group defined metabolic syndrome as having any three of the

following five symptoms: abdominal obesity determined by waist circumference, high triglycerides > 150 mg/dL, low HDL or “good” cholesterol (<40 mg/dL for men and <50 mg/dL for women), blood pressure > 130/85 mmHg, and fasting blood glucose levels > 110 mg/dL. While not everyone has adopted this definition, most agree that the more symptoms a person has, the more at risk they are for developing cardiovascular disease or other complications. Metabolic syndrome affects one out of every five overweight people.

Many people are able to lose weight by making changes to their diet and increasing their amount of exercise. Exercise not only promotes weight loss by burning excess fat and increasing muscle mass, but it also improves the body’s response to insulin which can make a big difference to people who are insulin resistant. Reducing the number of calories eaten per day and controlling portion sizes can also contribute to weight loss, which may help some people with diabetes reduce or eliminate their need for oral

diabetes medications. Many popular “fad” diets lack the support of quality research studies to prove whether they work. However, a recent clinical trial designed to study the effects of the Atkins diet was led by Guenther Boden, MD at Temple University in Philadelphia, Pennsylvania. The study revealed that the primary reason behind the weight loss on followers of this diet plan was a reduction of calories. See the article on page 28 for more details.

It is clear that overweight and obesity can cause health problems. But the results of the DPP study show that losing weight is possible and, more importantly, losing weight and exercising can help prevent or reverse those health problems. However, there are some situations in which diet and exercise are not effective at helping people lose weight. So we ask ourselves, how is medical science addressing the issue of weight loss?

Oral Medications to Treat Obesity

There are several prescription drugs now available to treat obesity. Weight loss drugs are usually not recommended for those who are only mildly overweight unless there are other serious health problems such as diabetes or heart disease. A recent article in the April 5, 2005 issue of *Annals of Internal Medicine* reports on the results of a study to assess the safety and effectiveness of U.S. Food and Drug Administration (FDA) approved weight loss medications and other medications used for weight loss. Researchers reviewed 79 clinical trials involving dietary intervention plus the following obesity drugs:

Generic name	Brand name	Method of action
sibutramine	Meridia	appetite suppressant
orlistat	Xenical	prevents absorption of fats
phentermine	Adipex-P, Fastin, Ionamin, Oby-Trim	appetite suppressant
diethylpropion	Tenuate	appetite suppressant
fluoxetine	Prozac	primarily for depression; balances natural brain chemicals
bupropion	Wellbutrin	primarily for depression and smoking cessation, balances natural brain chemicals
topiramate	Topamax	primarily used to treat epilepsy
sertraline	Zoloft	primarily for depression; balances natural brain chemicals
zonisamide	Zonegran	primarily used to treat epilepsy

Review of the drug trials showed that sibutramine, orlistat, fluoxetine, sertraline, bupropion, topiramate and zonisamide can cause modest weight reduction of approximately five kg (slightly more than 11 lbs) or less after one year of use when combined with dietary intervention. This may not seem like very much, but when one considers that the Diabetes Prevention Program (DPP) trial showed a medical benefit with a mere five percent loss of body weight, weight loss drugs may be very beneficial in helping obese individuals reduce their risk of diabetes. The review also revealed that among the drugs listed above, sibutramine and orlistat have been studied the most. In fact, GlaxoSmithKline recently reported results of a four-year study demonstrating that weight loss with orlistat can reduce the risk of developing type 2 diabetes in individuals with impaired glucose tolerance. Research results published in April 2004 *Diabetes Care* revealed that sibutramine significantly reduced body weight and waist circumference as well as fasting blood glucose and A1c levels in individuals treated with the drug. In addition to the drugs discussed above, the pharmaceutical company, Sanofi-Aventis, is in the process of developing a drug known as rimonabant (Acomplia), which is a new form of appetite suppressant that has been shown to be quite effective in weight loss. The company plans to file a new drug application for Acomplia with the FDA this year and, if successful, market the drug in 2006.

Despite the research and availability of new drugs, there are still many questions left to be answered. The authors of the review paper suggest that the long-term effects of these drugs on health outcomes be studied to ensure long-term safety as well as effectiveness. Other questions raised included:

Do combinations of drugs promote greater weight loss than one drug alone, and are drug combinations safe?

If more intense diet and exercise interventions are combined with weight loss medications, will individuals be able to lose even more weight than current studies suggest?

How long should each drug be taken? One year? Two years? Ten years?

Side effects of the drugs are also an important issue and should be thoroughly discussed between patient and medical provider before making the decision to begin drug therapy for obesity. Some of the side effects of the drugs discussed here included increases in blood pressure and heart rate, gastrointestinal symptoms (diarrhea and flatulence) and effects on the central nervous system.



Surgery to Treat Obesity

The first bariatric surgery was performed in 1954 and since then the number of weight loss surgeries has climbed along with the rate of obesity. According to a weight loss surgery review article published in the April 5, 2005 issue of *Annals of Internal Medicine*, an estimated 140,000 surgical procedures for weight loss were performed in the U.S. in 2004. The study, funded by the U.S. Agency for Healthcare Research and Quality, reviewed 147 clinical trials on the surgical treatment of obesity including procedures known as gastric bypass, laparoscopic adjustable gastric band technique, and biliopancreatic bypass, all of which serve to reduce the size of the stomach and re-route the intestines in order to prevent food from being absorbed and, as a result, promote weight loss. Results show that surgery can result in considerable weight loss (20-30 kg or approximately 44-66 lbs) for severely obese individuals with a BMI greater than or equal to 40, and one study reported continued weight loss over eight years with improvements in diabetes after surgery. Many obesity surgery studies have also shown improvements in hypertension, dyslipidemia (a fat protein metabolism disorder resulting in high levels of “bad” or LDL cholesterol and low levels of “good” HDL cholesterol), and sleep apnea following surgery.

But more data are needed to determine the effectiveness and appropriateness of each different type of surgery for different types of individuals. Complications resulting from surgery occur in approximately 20 percent of people who undergo the procedures, and researchers must focus on ways to reduce these complications which can include internal bleeding or gastrointestinal problems such as vomiting or acid reflux. Finally, research should be done to determine if surgery is effective for less severely obese individuals.

Clearly, more work needs to be done in the area of obesity research. What we do know is that excess fat, especially when located in the abdomen, contributes to diabetes and cardiovascular disease and that losing weight can help decrease one’s risk for these diseases. Whether diet and exercise, prescription weight loss medications, or surgery is the best method for weight loss depends on the individual’s level of overweight or obesity and their personal needs and doctor recommendation. We are fortunate that science has brought us to the point where medication and surgery are effective weight loss options, but we still await the day when researchers will find answers to crucial questions of long-term safety and effectiveness of each type of therapy among different groups of people affected by obesity. ■

