



Roadmaps for Clinical Practice

Case Studies in Disease Prevention and Health Promotion

Assessment and Management of Adult Obesity:

A Primer for Physicians

Evaluating Your Patients for Overweight or Obesity

2

Evaluating Your Patients for Overweight or Obesity

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Medical care is determined on the basis of all the facts and circumstances involved in an individual case and is subject to change as scientific knowledge and technology advance and patterns of practice evolve. This publication reflects the view of the experts and reports in the scientific literature as of 2003.

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Preface

In the United States, increasing trends in morbidity and mortality related to chronic diseases and injuries have led the American Medical Association (AMA) and others to address strategies for promoting health and preventing disease and disability. Over the past decade, the AMA has launched national campaigns against violence, alcohol abuse, and tobacco use. Recently, the AMA launched national programs to address low health literacy, patient safety, and disparities in health services and outcomes.

To further address the health challenges facing our nation, the AMA is developing a series of case-based publications for physicians as part of a new program titled *Roadmaps for Clinical Practice: Case Studies in Disease Prevention and Health Promotion*. The Roadmaps project fulfills an AMA and US Department of Health and Human Services (DHHS) partnership established through a Memorandum of Understanding (MOU) signed by both organizations in the year 2000. The series concentrates on the *Healthy People 2010* objectives, which were developed by the US Public Health Service to help professionals address the leading causes of morbidity and mortality in this country. The series also supports the goals of the DHHS *HealthierUS* initiative which was established in 2003 to help Americans lead longer, better, and healthier lives. This primer, produced with support from The Robert Wood Johnson Foundation, is part of the Roadmaps series.

The Roadmaps series aims to help physicians prevent or reduce injury and chronic disease through early detection and disease management in addition to promoting healthier lifestyles through their medical practices and communities. Emphasis is directed at promoting personal behaviors that have both immediate and long-term health benefits and at modifying behaviors that cause the greatest burden of suffering. According to the US Preventive Services Task Force, counseling patients about personal health practices (smoking, diet, physical activity, drinking, injury prevention, and sexual behavior) remains one of the most underused but important parts of the health visit.

This primer focuses on the rising prevalence of a serious, chronic health condition—obesity. Two weight-linked behaviors—physical inactivity and unhealthy eating—are given important consideration. It is estimated that 300,000 preventable deaths occur each year in the United States due to diet and physical inactivity, both of which contribute to obesity—only tobacco use causes more preventable deaths in this country. Growing scientific consensus on the health risks of physical inactivity and improper diet mandates that physicians become informed and prepared to assist patients in leading more active and healthy lives. Physicians have an important opportunity to encourage improvements in health behaviors and outcomes, including influencing motivation and success with weight loss treatment. **It is never too late to start and have a favorable impact on health. Patients of all ages can and will benefit.**

We encourage you to review this primer and to participate in the accompanying continuing medical education (CME) program. Please also take some time to complete and return the evaluation form that accompanies this primer. Your feedback is valuable for updating this publication and for planning future physician education programs. We invite you to use these resources and take action—in your practice and community—to promote healthier lifestyles among your patients, colleagues, and neighbors.

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Objectives

This primer is designed to educate primary care physicians about providing medical care to overweight and obese adults. It is presented in a modular format to facilitate its use as an educational and teaching tool. Patient scenarios are included for self-evaluation and to reinforce information presented. A continuing medical education (CME) component worth 4.5 credit hours is also offered. After completing this program, physician participants should be able to:

- identify overweight and obesity in their patients
- describe the medical and public health implications of adult overweight and obesity and identify opportunities for patient, family, and community intervention
- incorporate assessment and management of adult overweight and obesity into their clinical practices
- identify specific patient comorbidities and health risks that are caused and/or exacerbated by overweight and obesity that may interfere or even contraindicate treatment
- understand the appropriate application of diet, physical activity, behavior changes, pharmacotherapy, and surgery in obesity treatment
- locate information about culturally and linguistically appropriate strategies and resources to prevent and treat adult overweight and obesity
- enhance personal and office practices to optimize sensitivity to the needs and concerns of overweight and obese patients

This primer is not intended to function as a clinical guideline, standard of care, or definitive resource for the assessment and management of obesity. However, more detailed information is available in the references and resources listed in each booklet of this primer.

Case presentation

Mary, a 42-year-old Caucasian woman, has been a patient in your practice for 3 years. She initially presented with high blood pressure, which has been well controlled with a diuretic agent. Prior to her routine scheduled appointment, she had a fasting blood test. Since her last visit 6 months ago, she has been experiencing some heartburn, self-treated with over-the-counter H2-blockers, and more aching in her weight-bearing joints.

On exam, her height is 66 inches and body weight is 190 pounds, up 5 pounds from her last visit. Blood pressure is 134/90, up several points from her last visit as well. The rest of the exam is unchanged.

Mary's previous lab tests were within normal limits. Current test results indicate a fasting glucose of 118 mg/dL, total triglycerides of 255 mg/dL, and high-density lipoprotein (HDL cholesterol) of 42 mg/dL. All other tests are normal.

In clinical medicine, physicians usually seek the common underlying cause for their patients' multiple complaints. In the case study presented here, Mary's medical problems, although perhaps not initially evident, can be attributed to her obesity.

Obesity is an important issue in primary care practice.

In 1998, the National Heart, Lung, and Blood Institute (NHLBI), in cooperation with the National Institute of Diabetes and Digestive and Kidney Diseases, published the *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: Evidence Report*.¹ The *Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*² was subsequently developed cooperatively by the NHLBI and the North American Association for the Study of Obesity as a condensed version of the Guidelines. Both publications recommend aggressive obesity care in the primary care setting, beginning with identification, classification, and categorization of risk.

This booklet provides simple evaluation strategies based on the *Clinical Guidelines* and *Practical Guide*. In particular, the booklet describes the diagnosis of obesity and evaluation of health status through three key measures: (1) body mass index (BMI),

(2) waist circumference, and (3) risk factors for diseases and conditions associated with obesity.¹ The booklet also discusses the possible causes of obesity and patient factors that affect obesity.

How do I diagnose overweight and obesity?

The first step to diagnosing overweight and obesity is to determine your patients' BMI using weight and height measurements.^{1,3} BMI provides a measure of total body fat based on height and weight that applies to both adult men and women. The BMI can either be calculated using the simple equations shown in Figure 2.1 or determined using a BMI chart. For your convenience, a BMI chart is provided here as Figure 2.2; a laminated BMI chart is also included with this primer.

BMI replaces the previous height–weight terminology (such as percent ideal or desirable body weight) and is a more reliable method for assessment.^{1,3} This method is recommended because it provides an estimate of total body fat* and is related to risk of disease.

Figure 2.1 Determining BMI

There are two easy ways to determine your patients' BMI:

1. BMI is calculated as weight in kilograms (kg) divided by the square of height in meters (m²).

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height squared (m}^2\text{)}}$$

Using pounds (lb) and inches (in), divide weight in pounds by the square of height in inches. Then multiply the resulting number by 703.

$$\text{BMI} = \frac{\text{weight (lbs) x 703}}{\text{height squared (in}^2\text{)}}$$

or

2. Use a BMI chart (see Figure 2.2 or laminated card).

* Although BMI can be used to estimate total body fat, it does not distinguish the composition of lean versus fat tissue. For example, a non-obese bodybuilder may have an elevated BMI due to unusual muscularity. By contrast, an older adult may have a normal BMI but may be obese due to an unusually low lean body mass. Other techniques, including skinfold anthropometry and bioelectrical impedance analysis, are available for assessing patients' proportions of lean and fat mass. However, these techniques are not currently recommended for office use.

Figure 2.2 Body Mass Index Chart

BMI	Normal										Overweight										Obese										Extreme obesity									
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54				
Height (inches)	58	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239	244	248	253	258			
Body weight (pounds)	59	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247	252	257	262	267			
	60	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255	261	266	271	276			
	61	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264	269	275	280	285			
	62	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273	278	284	289	295			
	63	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282	287	293	299	304			
	64	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291	296	302	308	314			
	65	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300	306	312	318	324			
	66	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309	315	322	328	334			
	67	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319	325	331	338	344			
	68	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328	335	341	348	354			
	69	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338	345	351	358	365			
	70	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348	355	362	369	376			
	71	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358	365	372	379	386			
	72	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368	375	383	390	397			
	73	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378	386	393	401	408			
	74	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431		
	75	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399	407	415	423	431			
	76	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410	418	426	435	443			

Source: *The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity, Bethesda, Md: National Institutes of Health; 2000. NIH Publication number 00-4084, October 2000.

Figure 2.3 Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risks

BMI (kg/m ²)	Obesity Class	Disease risk* relative to normal weight and waist circumference	
		Men ≤ 40 in (≤ 102 cm) Women ≤ 35 in (≤ 88 cm)	Men > 40 in (> 102 cm) Women > 35 in (> 88 cm)
Underweight	< 18.5	—	—
Normal	18.5 – 24.9	—	—
Overweight	25.0 – 29.9	Increased	High
Obesity (Mild)	30.0 – 34.9	I	High
(Moderate)	35.0 – 39.9	II	Very high
(Severe/ extreme)	≥ 40	III	Extremely high

* Disease risk for Type 2 diabetes, hypertension, and cardiovascular disease

Source: Adapted from National Heart, Lung, and Blood Institute and National Institute for Diabetes and Digestive and Kidney Diseases. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: Evidence Report*. *Obes Res*. 1998;6(suppl 2):515-210S.

After determining your patients' BMI, use the BMI value to classify your patients as underweight, normal weight, overweight, or obese. Figure 2.3 provides the NHLBI's standard classification.** If your patients fall into the category for obesity, specify whether it is Class I (mild), Class II (moderate), or Class III (severe) obesity. Note that the term *morbid obesity* has been replaced with newer descriptive terms, including Class III obesity, extreme obesity, or clinically severe obesity. Nonetheless, morbid obesity is still listed in the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM), where it is used for coding in clinical practice.

** The World Health Organization (WHO) uses the same classification system of overweight and obesity as the NHLBI with one notable exception.³ The BMI range of 25 to 29.9 kg/m² is termed pre-obese instead of overweight to reflect the higher risk potential for those with a BMI in this range. In addition, a recent WHO expert consultation on Asian populations suggests that the threshold for overweight be lowered to a BMI of 23 kg/m² for this ethnic group to reflect the higher risk potential at lower BMI levels. Other ethnic differences may emerge as more clinical research data is obtained.⁴

With a height of 66 inches and weight of 190 pounds, Mary's BMI is 31. This places her in Class I (mild) obesity.

Why is it important to measure waist circumference?

After determining the BMI of your patients, the next step in evaluation is to measure waist circumference. Instructions for measuring waist circumference can be found in Figure 2.4. It is important to note that waist circumference is not measured at the level of the umbilicus (the “natural” waist), but at the level of the iliac crest.

Figure 2.4 Measuring Waist Circumference²

Because most practices do not routinely measure waist circumference, it may be helpful for you or your intake nurse to explain why it is being done. A simple explanation, such as the following, usually suffices: “A waist measurement is an important clue to your current and future health. I'd like you to breathe normally while I take your measurement.”

To measure your patients' waist circumference:

1. Locate the upper hip bone and the top of the right iliac crest.
2. Place a measuring tape in a horizontal plane around the abdomen at the level of the iliac crest.
3. Ensure that the tape is snug, but does not compress the skin, and is parallel to the floor.
4. Read the measurement at the end of a normal expiration of breath.

It is important to know your patients' waist circumference because the health risks of overweight and obesity are independently associated with excess abdominal fat.^{5,6} Excess abdominal fat is clinically defined as a waist circumference >40 inches (>102 cm) in men and >35 inches (>88 cm) in women (see Figure 2.3). Population studies have shown that people with excess abdominal fat have an excess burden of impaired health and increased cardiovascular risk

compared to those with normal waist circumferences. In addition, recent data from the National Health and Nutrition Examination Survey, a nationally representative cross-sectional survey of US adults, indicated that within the categories of healthy weight (BMI 18.5–24.9), overweight (BMI 25.0–29.9), and Class I (mild) obesity (BMI 30.0–34.9), adults with high waist circumference values were increasingly likely to have hypertension, diabetes, dyslipidemia, and the metabolic syndrome (see Figure 2.5) compared with those with normal waist circumference values.⁷

Although the mechanisms by which abdominal and/or visceral obesity lead to increased morbidity and mortality are not fully understood (see Figure 2.5), identification of excess abdominal fat is paramount because it categorically increases disease risk for each BMI class.

Figure 2.5 The Metabolic Syndrome

Excess abdominal fat is one of the clinical features of the metabolic syndrome, also known as insulin resistance syndrome, (metabolic) Syndrome X, dysmetabolic syndrome, and multiple metabolic syndrome.⁸ In the metabolic syndrome, abdominal obesity presents with concurrent features such as insulin resistance, dyslipidemia (hypertriglyceridemia or low high-density lipoprotein cholesterol levels), hypertension, and impaired glucose tolerance, which together amplify risk for cardiovascular disease beyond the risk for each individual feature.⁹

According to the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III), the metabolic syndrome is defined as having three or more of the features listed in Figure 2.6.⁸ Under this definition, it is estimated that approximately 24% of US adults have the metabolic syndrome, with a higher prevalence rate among older individuals and Mexican Americans.¹⁰

The identification of the metabolic syndrome lends even greater urgency for the management of patient overweight or obesity. Even modest weight reduction and increase in physical activity can significantly decrease the risk of cardiovascular disease through control of the metabolic syndrome.

Figure 2.6 Clinical Features of the Metabolic Syndrome

Risk factor	Defining level
Abdominal obesity	Waist circumference
Men	>40 in (>102 cm)
Women	>35 in (>88 cm)
Triglycerides	≥150 mg/dL
High-density lipoprotein (HDL) cholesterol	
Men	<40 mg/dL
Women	<50 mg/dL
Blood pressure	≥130/≥85 mmHg
Fasting glucose	110-125 mg/dL (ATP III defines as ≥110)

Sources: Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III, or ATP III) Available at: www.nhlbi.nih.gov/guidelines/cholesterol/atglance.htm#Step8.

The American Association of Clinical Endocrinologists and the American College of Endocrinology suggest two additional factors be considered: overweight/obesity (BMI >25) and high 2-hour post-glucose challenge (>140 mg/dL). ACE Guidelines for Glycemic Control. *Endocr Pract.* 2003;9 (Supl.):7–13.

Mary's waist circumference is 36 inches. This, in addition to her triglycerides of 225 mg/dL, fasting glucose of 118 mg/dL, HDL cholesterol of 42 mg/dL, and blood pressure of 134/90, shows that she has the metabolic syndrome. This places her at increased risk of cardiovascular disease.

What health risks are associated with obesity?

The next step in assessing overweight and obesity is to review your patients' medical, social, and family history for current and potential obesity-related symptoms and diseases. Figure 2.7, which contains a list of obesity-related conditions, can be used as a checklist.

As described in Booklet I, obesity is linked with some of the most prevalent and costly medical problems seen in daily practice. Obesity alone is a risk factor for Type 2 diabetes, hypertension, coronary artery disease, gallbladder disease, osteoarthritis, cancer, and early death. In combination with the metabolic syndrome, it further increases the risk of cardiovascular disease. In sum, obesity affects at least nine organ systems of the body.¹¹

Note that the psychosocial complications of obesity may be as significant as the physical health concerns. Obese people, particularly those with extreme obesity, may experience discrimination and other difficulties in the workplace or in personal relationships, leading to poor self-esteem, social withdrawal, depression, and other mental health problems. In addition, obesity may lower the individual's perception of general health, while comorbid disorders and their effect on physical function may lower morale.

Both psychosocial and other medical factors contribute to a decline in general health and quality of life. A continuum has been observed between mildly, moderately, and severely obese individuals, with quality of life worsening with increasing body weight and the number of acquired comorbid illnesses.

In reviewing Mary's history, you identify five obesity-related conditions:

- hypertension
- gastroesophageal reflux disease (GERD)
- impaired glucose tolerance (possible diabetes)
- hypertriglyceridemia
- arthralgia

In addition, specific questions that you ask during the review of systems reveal the following symptoms:

- low self-esteem
- excessive daytime sleepiness

Figure 2.7 Obesity-related Risk Factors and Conditions: cardiovascular, endocrine, gastrointestinal, genitourinary, integument, musculoskeletal, neurologic, psychological, and respiratory

Cardiovascular

- Hypertension
- Congestive heart failure
- Cor pulmonale
- Varicose veins
- Pulmonary embolism
- Coronary artery disease

Endocrine

- The metabolic syndrome
- Type 2 diabetes
- Dyslipidemia
- Polycystic ovarian syndrome/angrogenicity
- Amenorrhea/infertility/menstrual disorders

Gastrointestinal

- Gastroesophageal reflux disease (GERD)
- Non-alcoholic fatty liver disease (NAFLD)
- Cholelithiasis
- Hernias
- Colon cancer

Genitourinary

- Urinary stress incontinence
- Obesity-related glomerulopathy
- Hypogonadism(male)
- Breast and uterine cancer
- Pregnancy complications

Integument

- Striae distensae (stretch marks)
- Status pigmentation of legs
- Lymphedema
- Cellulitis
- Intertrigo, carbuncles
- Acanthosis nigricans/skin tags

Musculoskeletal

- Hyperuricemia and gout
- Immobility
- Osteoarthritis (knees, hips)
- Low back pain

Neurologic

- Stroke
- Idiopathic intracranial hypertension
- Meralgia paresthetica

Psychological

- Depression/low self esteem
- Body image disturbance
- Social stigmatization

Respiratory

- Dyspnea
- Obstructive sleep apnea
- Hypoventilation syndrome
- Pickwickian syndrome
- Asthma

What additional testing is needed?

Based on your patients' presenting signs and symptoms, perform tests to identify conditions associated with obesity and conditions that may contribute to your patients' obesity. No single laboratory test or diagnostic evaluation is indicated for all patients with obesity. The specific evaluations performed should be based on presentation of symptoms, risk factors, and index of suspicion.¹¹

Nonetheless, based on other screening guideline recommendations, most, if not all, patients should have a fasting lipid panel and fasting blood glucose determination at presentation. The physician should also be alert to hypertension, obstructive sleep apnea, and gall-bladder disease, which are commonly associated with obesity. Although rarely a cause of obesity, hypothyroidism and Cushing's syndrome should be considered in the differential diagnosis for obesity when indicated by patient history. Recommended tests for these and other conditions are outlined in Figure 2.8.

You decide to order additional tests to evaluate Mary's hypertension and diabetes. When you ask Mary about her excessive daytime sleepiness, she feels that it is due to the fact that she stays up too late every night. She denies snoring, gasping, and choking episodes during sleep and denies awakening with headaches. She admits to decreased energy levels, decreased interest in her recreational activities, and negative feelings about her weight, but states that her mood, overall, is "good." She feels that her quality of life would improve if she lost weight.

Source: Kushner RF and Roth JL, 2003.

Figure 2.8 Laboratory and Diagnostic Evaluation of the Obese Patient based on presentation of symptoms, risk factors, and index of suspicion

Note: See Figure 2.6 for a full list of medical conditions that are directly or indirectly related to obesity.

<p>If suspicion of...</p> <p>Obstructive sleep apnea (daytime sleepiness, loud snoring, gasping or choking episodes during sleep, and awakening headaches) (Surrat and Findley 2003)</p> <p>Alveolar hypoventilation (Pickwickian) syndrome (hypersomnolence, possible right-sided heart failure including elevated jugular venous pressure, hepatomegaly and pedal edema) (Kushner 2003)</p> <p>Cushing's syndrome (moon face, thin skin that bruises easily, severe fatigue, striae) (Raff 2003)</p>	<p>Consider...</p> <ul style="list-style-type: none"> • Measurement of neck circumference (>17 inches in men, >16 inches in women) • Polysomnography for oxygen desaturation, apneic and hypopneic events • Ear/nose/throat (ENT) examination for upper airway obstruction • Blood pressure measurement • Polysomnography (to rule out obstructive sleep apnea) • Complete blood count (to rule out polycythemia) • Blood gases (P_{CO2} often elevated) • Chest radiography (enlarged heart and elevated hemidiaphragms) • Electrocardiogram (EKG) (right atrial and right ventricular enlargement) • Pulmonary function tests (reduced vital capacity and expiratory reserve volume) • Elevated late-night salivary cortisol level (>7.0 nmol/L diagnostic, 3.0–7.0 nmol/L equivocal) • Repeatedly elevated measurements of cortisol secretion (urine free cortisol [upper normal 110–138 nmol/d] or late-night salivary cortisol levels) may be needed 	<p>If suspicion of...</p> <p>Hypertension (Chobanian et al. 2002)</p> <p>Gallstones</p> <p>Hepatomegaly/non-alcoholic fatty liver disease (AGA Statement 2002; AGA Technical Review 2002)</p>	<p>Consider...</p> <ul style="list-style-type: none"> • Mean of two or more properly measured seated blood pressure office visits (pre-hypertension, 120–139/80–89; hypertension, 140–159/90–99) • Electrocardiogram, urinalysis, complete blood cell count, blood chemistry, and fasting lipid profile • Liver function tests (serum bilirubin and alkaline phosphatase elevated) and ultrasonography of gallbladder • Consider abdominal computed tomography exam • Liver function tests elevated 1 to 4 times normal (alanine aminotransferase usually >aspartate aminotransferase, serum bilirubin, prothrombin time; decreased albumin) • Imaging study (ultrasonography or computerized tomography scan) with evidence of fat • Minimal or no alcohol intake with negative testing for viral hepatitis, autoimmune disease, and congenital liver disease • Definitive diagnosis with liver biopsy
<p>Diabetes mellitus (Barr et al. 2002; Diabetes Care 2002)</p> <p>Hypothyroidism (AAACE Task Force 2002)</p> <p>Metabolic syndrome (ATP III 2001; American College of Endocrinology 2003)</p> <p>Polycystic ovarian syndrome (oligomenorrhea, hirsutism, probable obesity, enlarged ovaries may be palpable, hypercholesterolemia, impaired glucose tolerance, persistent acne, and androgenic alopecia) (Meisler 2002)</p>	<p>Sources</p> <ul style="list-style-type: none"> • Surrat PM, Findley LJ. Clinical manifestations and diagnosis of obesity hypoventilation syndrome. <i>Up To Date</i>. 2003. • Kushner RF. Obesity management for obstructive sleep apnea. In: <i>Snoring and Obstructive Sleep Apnea</i>. 3rd ed., DN Fairbanks, SA Mickelson, BT Woodson (eds.). Philadelphia, Pa: Lippincott Williams & Wilkins; 2003, pp. 233–240. • Raff H, Findling JW. A physiologic approach to diagnosis of the Cushing syndrome. <i>Ann Intern Med</i>. 2003;138(12):980–991. • Barr RG, Nathan DM, Meigs JB, Singer DE. Tests of glycemia for the diagnosis of Type 2 diabetes mellitus. <i>Ann Intern Med</i>. 2002;137(4):263–270. • Diabetes Care. January 2002, Suppl. 1. ADA: Clinical Practice Recommendations 2003. • AAACE Thyroid Task Force. American Association of Clinical Endocrinologists medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism. <i>Endocr Pract</i>. 2002;8(6):457–469. • Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). <i>JAMA</i>. 2001;285:2486–2497. • American College of Endocrinology Position Statement on Insulin Resistance Syndrome. <i>Endocr Pract</i>. 2003;9(3):240–252. • Meisler JG. Toward optimal health: the experts discuss PCOS. • <i>J Women's Health & Gender-Based Medicine</i>. 2002;11(7):579–584. • Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LD, Izzo JL et al. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. <i>JAMA</i>. 2002;289(19):2560–2572. • American Gastroenterological Association Medical Position Statement: Non-alcoholic Fatty Liver Disease. <i>Gastroenterology</i>. 2002;123:1702–1704. • American Gastroenterological Association Technical Review on Non-alcoholic Fatty Liver Disease. <i>Gastroenterology</i>. 2002;123:1705–1725 	<p>Consider...</p> <ul style="list-style-type: none"> • Fasting blood glucose (≥ 126 mg/dL on two occasions), random blood glucose (≥ 200 mg/dL) with symptoms of diabetes, or 120 min post-glucose challenge ≥ 200 mg/dL • Glycosylated hemoglobin ($> 7.1\%$) and microalbuminuria (> 30 mg/d) at baseline • Blood pressure measurement and fasting lipid profile • Serum thyroid-stimulating hormone ($> 5\mu\text{m/L}$) <p>Three of five criteria needed for diagnosis:</p> <ul style="list-style-type: none"> • Triglycerides > 150 mg/dL • High-density lipoprotein cholesterol < 40 mg/dL (men) or < 50 mg/dL (women) • Blood pressure $> 130/ > 85$ mmHg • Fasting glucose > 110 mg/dL • 120-min post-glucose challenge 140–200 mg/dL (American College of Endocrinology 2003) <ul style="list-style-type: none"> • Morning blood draw for total testosterone, free and weakly testosterone, DHEAS, prolactin, thyroid-stimulating hormone, and early morning 17-hydroxyprogesterone level (normal values vary according to laboratory); testing should be done when patient is off oral contraceptives • Lipid profile 	

Source: Kushner RF and Roth JL, 2003.

When should treatment for overweight and obesity be pursued?

In selecting the appropriate intervention for your patients, it is helpful to consult the NHLBI’s algorithm for treating overweight and obesity, which is adapted in Figure 2.9. According to the algorithm, patients should pursue weight loss and control of risk factors if:

- BMI is 30 or greater or
- BMI is 25 to 29.9 and they have two or more risk factors or
- Waist circumference is greater than 35 in women or 40 in men and they have two or more risk factors.

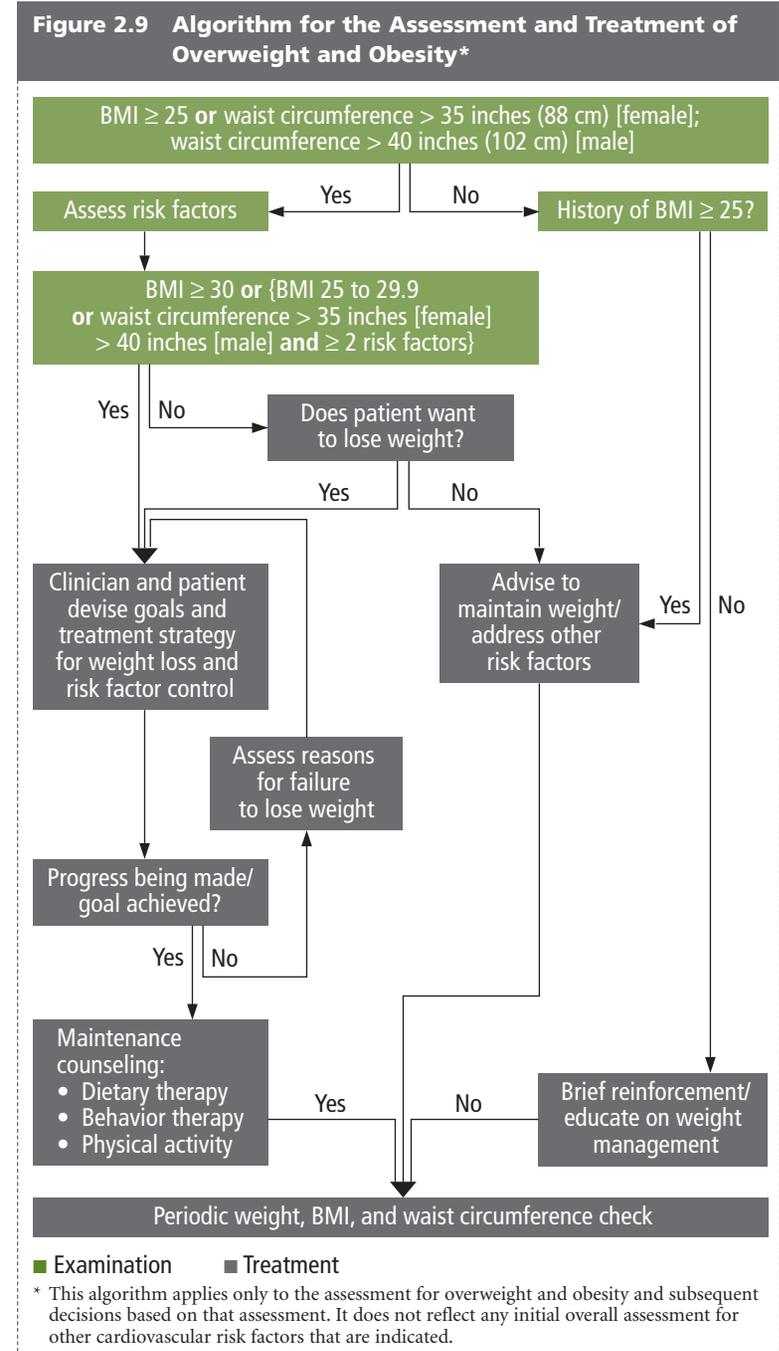
For those patients for whom treatment is not indicated, the algorithm recommends strategies for preventing overweight and obesity. In practice, all patients, especially those with a strong family history of risk factors, should be counseled on weight management.

Based on the NHLBI algorithm, treatment for Mary’s obesity is indicated. You explain to Mary that her weight is affecting her health by contributing to her heartburn, pain in her joints, high blood pressure, high blood sugar, and high triglycerides. Moreover, Mary is at increased risk for heart disease in the future. You tell Mary that you would like to get a better sense of why she has been gaining weight, so that the two of you will know how to address it.

What are the possible causes of obesity?

If treatment is indicated for your patients, begin by determining the most likely cause of your patients’ overweight or obesity. In many cases, overweight and obesity can be attributed to a mismatch between your patients’ lifestyle pattern of diet and physical activity and your patients’ calorie (energy) needs. Societal pressures that expose individuals to high-calorie convenience foods, along with technical advances that promote sedentary behavior, are a common cause of involuntary obesity.

Nonetheless, your patients’ history may suggest other causes of weight gain that warrant further investigation. For example, life events such as marriage, pregnancy, illness, relationship problems, quitting smoking/drinking, starting a new job, or a death in the



Source: Adapted from *The Practical Guide to the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*. National Heart, Lung, and Blood Institute and North American Association for the Study of Obesity. Bethesda, Md: National Institutes of Health; 2000. NIH Publication number 00-4084, October 2000.

family can influence your patients' diet and physical activity patterns or impact weight directly. By completing the Graphing Your Weight Gain chart (see Figure 2.10), you can help your patients identify underlying causes of weight gain.

Although genetic factors may influence eating and physical activity behaviors and therefore susceptibility to weight gain, rarely do they account entirely for a person becoming overweight or obese. Nonetheless, a familial predisposition should be considered if at least one first-degree relative is obese. Reviewing family history is also important because it may provide an opportunity to implement preventive care for other at-risk family members.

Certain medications are known to contribute to overweight and obesity (see Figure 2.11). Drug-induced effects should be suspected when the weight gain coincides with the initiation or dosage increase of a particular medication. If medication is identified as the underlying cause or contributor to overweight or obesity, a medication substitution or change in dosage should be considered whenever possible.

Endocrine disorders are rarely the cause of overweight and obesity. Nonetheless, hypothyroidism, Cushing's syndrome, hypothalamic tumors, and damage to the hypothalamus as a consequence of radiation, infection, or trauma have all been associated with weight gain. Figure 2.8 lists these conditions along with their presentation and diagnostic criteria.

You suggest that Mary complete the chronological history of weight gain chart (Figure 2.10) at home and bring it to her next appointment. In reviewing this chart with her, Mary notes that she maintained a healthy weight as a child, gained 10 pounds in college, and gained an additional 15 pounds during her two pregnancies. Over the past 2 years, she has gained an additional 30 pounds. She attributes this weight gain to poor eating habits and minimal physical activity due to long hours and increased stress at work.

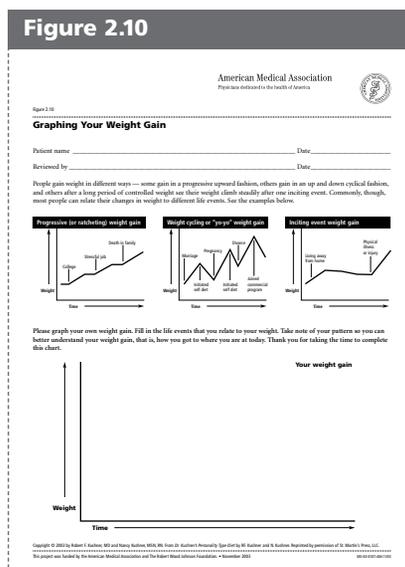


Figure 2.10 is shown at full size on pages 22-23.

Figure 2.11 Selected Medications Associated with Body Fat Weight Gain

Psychiatric/neurological

- Antipsychotic agents: phenothiazine, olanzapine, clozapine, risperidone
- Mood stabilizers: lithium
- Antidepressants: tricyclics, monoamine oxidase inhibitors, selective serotonin reuptake inhibitors (paroxetine hydrochloride), mirtazapine
- Antiepileptic drugs: gabapentin, valproate sodium, carbamazepine

Steroid hormones

- Corticosteroids
- Progestational steroids

Antidiabetes agents

- Insulin, sulfonylureas, thiazolidinediones

Antihypertensive agents

- Beta- and alpha-1 adrenergic receptor blockers

Antihistamines

- Cyproheptadine hydrochloride

HIV protease inhibitors

- lipodystrophy (central obesity)

Source: Kushner RF and Roth JL, 2003.

What is the next step in managing overweight or obesity in my patients?

After ruling out medical causes of overweight and obesity, the next step is to talk to your patients about weight loss. The next booklet in this series (Booklet 3: *Assessing Readiness and Making Treatment Decisions*) will help you get started. Before reading Booklet 3, you may wish to familiarize yourself with patient reimbursement options for obesity treatment (see Figure 2.12), in the event that your patients cite cost as a barrier to weight management.

Figure 2.12 Patient Reimbursement Options for Weight Management and Obesity Treatment

Patients should be aware that certain weight loss expenses can now be claimed as tax-deductible medical expenses. Some insurance companies have begun to include these expenses in their coverage, as well.

The Internal Revenue Service (IRS) ruling 202-19, passed in April 2002, states that “obesity is medically accepted to be a disease in its own right.” For taxpayers, this means that treatment specifically for obesity — including many commercial weight loss programs — can now be claimed as a medical deduction if prescribed by a physician. Weight loss to improve appearance, general health, or sense of well being is not tax deductible. The IRS also states that health club dues, exercise equipment, nutritional supplements, and diet foods are not deductible.

To be eligible for this deduction, patients must be defined as obese, with a BMI of 30 or more. Individuals who are overweight but not obese can claim weight loss expenses as a deduction if their physician prescribes it as part of their treatment for a weight-related health problem such as heart disease, hypertension, or diabetes.

In addition to IRS benefits, certain employee benefits (eg, medical savings accounts, flexible spending accounts, and health reimbursement arrangements) that follow IRS guidelines allow patients to seek reimbursement for costs if they meet the weight or medical qualifications to claim weight loss as a deductible expense.

Unfortunately, most managed care and additional insurance companies do not cover expenses related to weight loss. A recent study found that most plans currently promote fitness through Web sites, newsletters, programs related to specific weight-related health problems, and discounts or other financial incentives for fitness center memberships. However, companies have been reluctant to cover obesity treatment because it involves lifestyle changes that require extensive follow-up. With increasing evidence of the high medical costs of obesity, many companies are now beginning to regard obesity coverage as good business practice and may soon begin to adjust their policies accordingly.

Sources: American Institute for Cancer Research. Tax Breaks for Losing Weight? Karen Collins, MS, RD, CDN. Available at: www.aicr.org/action.lasso?Database=w005aicr.fp3&Layout=WEB&Response=pubsearchdetail.htm&RecordID=33176&Search.

American Obesity Association. Available at www.obesity.org/subs/tax/taxbreak.shtml.

If you only have 15 minutes...

- Tell your patient that you are concerned about his/her weight.
You can initiate this discussion by saying, “I’m concerned about your weight because I think it is causing (or will cause) health problems for you. Do you think that your weight is causing problems for you?”
- Advise your patient to lose weight.
First ask, “Have you ever tried to lose weight?” Praise your patient’s efforts, and reinforce that weight management through increasing physical activity and watching what one eats is good for health.
- If your patient is interested in weight management, share handouts for him/her to read at home.
Some handouts that you can share are the Graphing Your Weight Gain chart, the Eating Pattern Questionnaire, and the Weight Loss Questionnaire.
- Remember to follow up: If you give your patient handouts to read at home, be sure to ask him/her about them at the next visit.
- Ask if your patient would like help developing a plan for weight management.
- If your patient is currently not interested in losing weight, continue to educate him/her on the impact of weight on health.

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Suggested additional reading

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Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III, or ATP III) Available at: www.nhlbi.nih.gov/guidelines/cholesterol/index.htm.



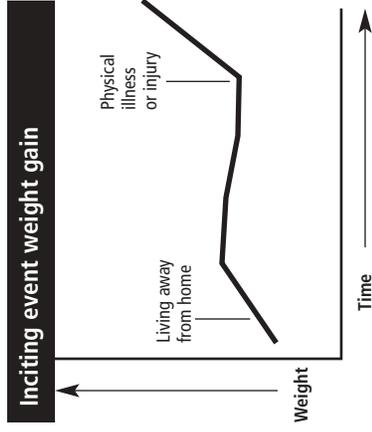
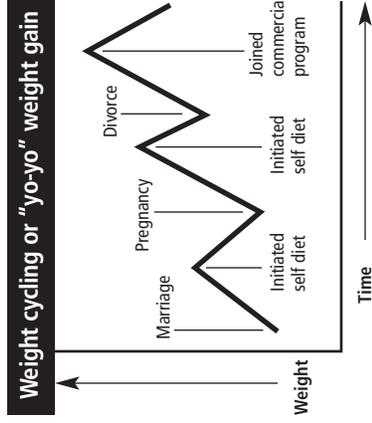
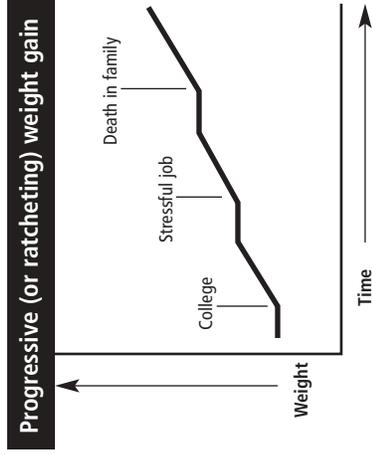
Figure 2.10

Graphing Your Weight Gain

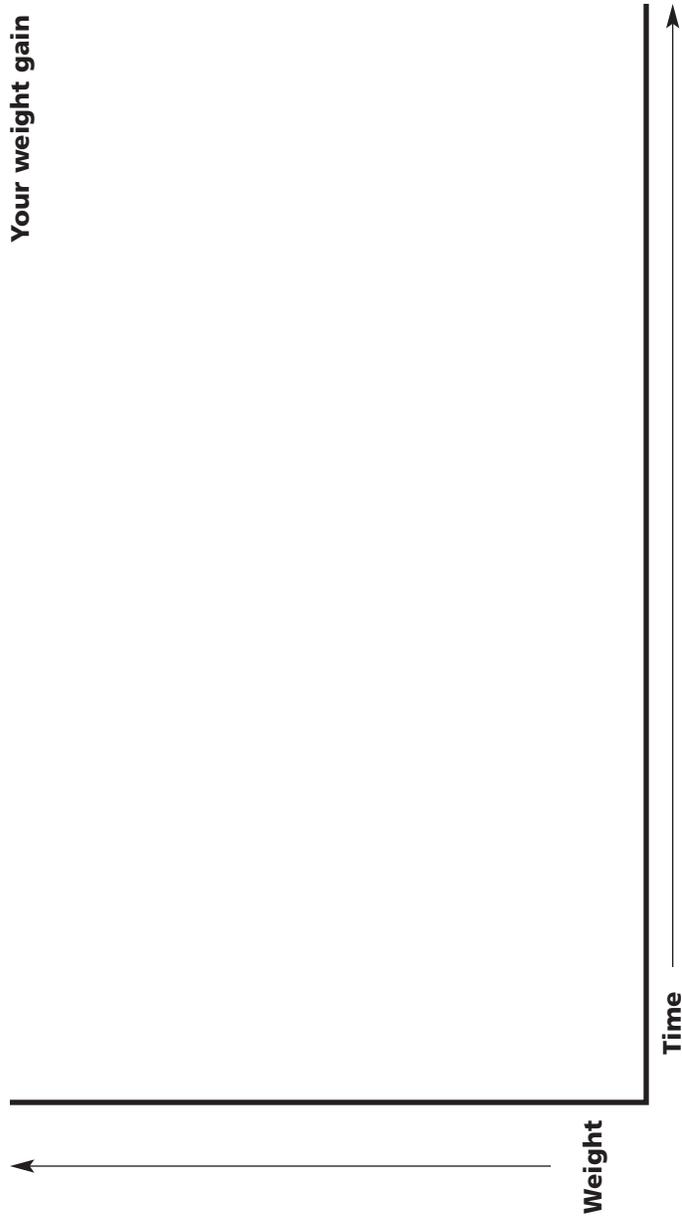
Patient name _____ Date _____

Reviewed by _____ Date _____

People gain weight in different ways — some gain in a progressive upward fashion, others gain in an up and down cyclical fashion, and others after a long period of controlled weight see their weight climb steadily after one inciting event. Commonly, though, most people can relate their changes in weight to different life events. See the examples below.



Please graph your own weight gain. Fill in the life events that you relate to your weight. Take note of your pattern so you can better understand your weight gain, that is, how you got to where you are at today. Thank you for taking the time to complete this chart.



Strategy for treatment of overweight and obesity

Evaluate your patients for current and potential health risks related to weight (Booklet 2)

- Measure body mass index (BMI)
- Measure waist circumference
- Assess for presence/extent of suspected comorbid diseases

Talk to your patients about weight loss (Booklet 3)

- Explain the importance of weight loss
- Assess your patients' readiness to make behavior changes
- Work with your patients to establish realistic treatment goals

Help your patients manage weight through dietary management (Booklet 4)

- Collaborate on strategies for reducing calories and balancing the diet
- Recommend weight loss programs and resources as needed
- Follow up with your patients to monitor progress and provide support

Help your patients manage weight through physical activity (Booklet 5)

- Collaborate on strategies for increasing physical activity in the daily lifestyle
- Recommend physical activity programs and resources as needed
- Follow up with your patients to monitor progress and provide support

If indicated, help your patients manage weight through pharmacotherapy (Booklet 6)

- Determine whether your patients are candidates for pharmacotherapy at this time
- If pharmacotherapy is an option, help your patients make and carry out treatment decisions
- Monitor your patients for weight loss and medication side effects

If indicated, help your patients manage weight through surgery (Booklet 7)

- Determine whether your patients are candidates for bariatric surgery at this time
- If surgery is an option, help your patients and their bariatric team make and carry out treatment decisions
- Manage your patients post-operatively

Optimize your communication and counseling style (Booklet 8)

- Establish an effective patient–physician partnership
- Help your patients obtain skills for self-management
- Be sensitive to anti-fat bias and approach the topic of weight sensitively

Optimize your office environment (Booklet 9)

- Be more sensitive to your patients' needs by adapting office practices and the waiting room configuration
- Set up your office with the equipment needed to assess and manage your patients
- Facilitate patient care through a team approach

Adapted from Serdula MK, Khan LK, Dietz WH. Weight loss counseling revisited. *JAMA*. 289;1747-1750:2003.