

A Practical Approach to Diet for Obesity

Robert J. Karp, MD, Edmund Decker, and Richard F. Leedy, Jr, DO
Camden, New Jersey

Obesity is the most common form of malnutrition in the United States today.^{1,2} It is an important precursor of morbidity and mortality from the major diseases of adult Americans.¹⁻⁷ Obese persons are more likely than the nonobese to have hypertension and hypercholesterolemia, both of which are associated with a higher occurrence of coronary and cerebral vascular disease.³⁻⁵ With obesity there is decreased glucose tolerance; improvement comes with weight loss.⁶ There is excess mortality from gallbladder disease among the obese.⁷

The lay public is well aware of the associations among obesity, sickness, and death. Not surprisingly, then, obesity is the ninth most common complaint of patients coming to family physicians.⁸

There are aspects of obesity and weight control of which the public is not aware that temper the enthusiasm of the physician to gratify the need of patients for quick weight reduction. Among those who are only moderately obese, population studies do not show an increased mortality sufficient to jeopardize health while reducing weight.⁹ As shown in Figure 1, excessive leanness is also associated with increased morbidity.^{7,10} Table 1 displays the documented significant morbidity and mortality associated with certain weight reduction modalities.¹¹⁻³⁰

This paper provides nomograms with which the physician can identify the mortality associated with a patient's level of obesity or leanness, and assists the physician in providing information about relative risks and benefits of specific weight-reduction regimens.

Defining Obesity: The Body Mass Index

For adults, obesity has traditionally been defined in terms of increased weight as a percentage

From the Department of Family Practice, University of Medicine and Dentistry of New Jersey, New Jersey School of Osteopathic Medicine, Camden, New Jersey. Requests for reprints should be addressed to Dr. Robert Karp, Department of Family Practice, UMDNJ-NJSOM, 300 Broadway, Camden, NJ 08103.

of ideal body weight from tables prepared by the Metropolitan Life Insurance Company.³¹ These tables require a subjective judgment of body frame ("light," "medium," or "heavy"). Such subjectivity renders these tables useless for investigation and in clinical practice because almost all patients seeking advice on weight loss define themselves as having a "heavy" frame.

Various ratios of weight to height provide an objective measure of obesity. Of these ratios, the body mass index of Quetelet (weight divided by the square of height) has been shown to correlate best with direct measures of body fat.³² Measures of the body mass index (BMI) correlate with the consequences of obesity, which have been described.³³

In clinical practice, use of the BMI requires either mathematical calculations or the use of a nomogram.³³ Figure 2 converts direct measurements of weight and height in pounds and inches into the BMI in kilograms divided by the square of the height in meters ($\text{kg}/(\text{m})^2$). The relative mortality for men and women aged 20 to 40 years can then be determined from a nomogram prepared by

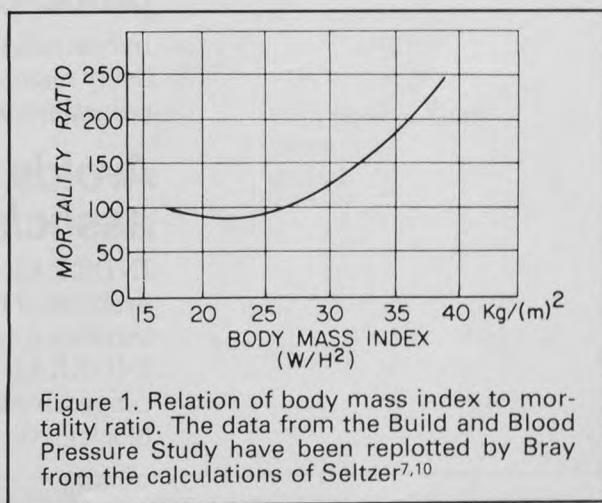


Figure 1. Relation of body mass index to mortality ratio. The data from the Build and Blood Pressure Study have been replotted by Bray from the calculations of Seltzer.^{7,10}

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Table 1. Comparisons of Dietary Methods

Method	Advantages	Morbidity	Costs	Mortality	
Diet Therapy Individual	Acceptable diet*	Noninvasive Maintenance of metabolic and physiologic daily requirements ¹⁴ Greater compliance for longer periods of time ¹⁴	Risk of psychological disturbances (especially depression) ¹¹⁻¹³ Behavioral changes, including changes in affect, time perception, and body image ¹⁵⁻¹⁶	Low	None
	Unacceptable diet**	Noninvasive Greater compliance ¹⁴	Same as above Critical body tissue breakdown to supply lacking nutrients ¹⁴⁻¹⁷ Disruption of nitrogen balance ¹⁴⁻¹⁷	Low (food costs may rise)	Possible
Group	Noninvasive	Same as individual therapy	Low to moderate	None	
	Greater compliance ¹⁸				
	Added support of others who are sensitive to the problems (positive reinforcement) ¹⁸⁻²⁰ Group exerts a competitive influence ¹⁹⁻²⁵				
Behavior modification ²⁵	Noninvasive	None noted to date	High (four times group)	None	
	Promotes weight loss that can be maintained ¹⁶⁻²¹				
	Promotes weight loss gradually by changing habits rather than eliminating nutrients ¹⁶⁻²¹				
	Works well in connection with other methods ²²				

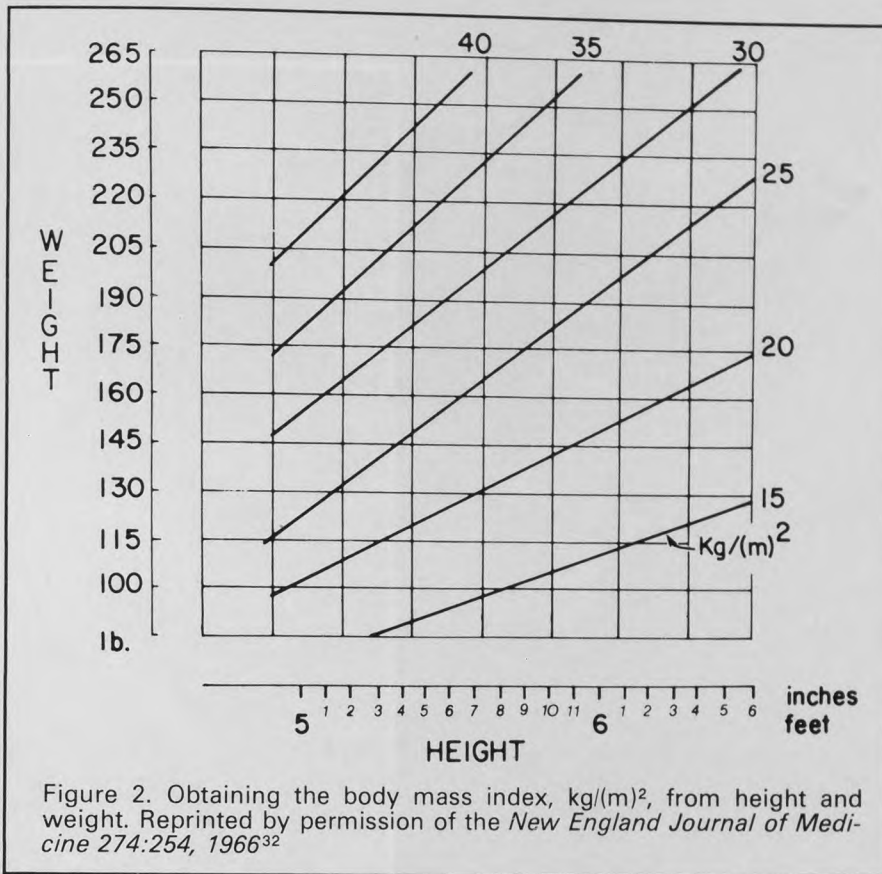
*Acceptable diet mixes a variety of foods to provide the recommended daily allowance of all nutrients
**Unacceptable diet severely restricts the content of one or more nutrients and thus does not provide the recommended daily allowance of all nutrients

Table 1. Comparisons of Dietary Methods (Continued)

Method	Advantages	Morbidity	Costs	Mortality
Exercise	Noninvasive	Increased risk of physical injury	Low	Slightly increased over those just employing diets because of the increased risk of accidents, injuries, and illnesses
	Works well in conjunction with other methods ²³	Increased risk of heart attack or other illness ⁷		
	Increased cardiovascular and respiratory functioning	Behavioral changes (eg, mood changes) ²³		
	Decreased body fat ⁷	Increased incidence of dehydration and shock ⁷		
	Improved cosmetic appearance and self-image			
Drug Therapy	Increased caloric utilization	Dependency	High	None when proper supervision is employed ²⁴
	Appetite suppression	Increased risk of addiction		
	Less need for self-compliance by patient ¹²	Increased risk of dehydration		
	Works well in conjunction with other methods	Risk of overdose ⁷		
		Hypotension ²⁵		
Surgery	Positive results when all else fails ^{27,28}	Complications of surgery, such as infection ^{7,28-30}	High	3.1% ^{7,28}
	Maintenance of weight reduction ^{27,29,30}	Medical problems, such as renal calculi, hypokalemia, diarrhea, and nausea ^{27,29,30}		Intestinal bypass 6% ²⁷
	No compliance needed by patient ^{27,29,30}	Fatty infiltration of the liver ²⁷⁻³⁰		4.6% ²⁹
		Increased incidence of malabsorption and vitamin deficiency ^{7,27,29,30}		Gastroplasty 2% ²⁷

Bray⁷ from data of Seltzer³² (Figure 1). For persons older than 40 years, relative mortality associated with obesity is generally decreased; thus the

risk of weight reduction compared with that of obesity itself increases with age. Moreover, only with a BMI greater than 30 kg/(m)² is there a sub-



stantial increase in relative mortality, although a BMI of $27 \text{ kg}/(\text{m})^2$ is considered overweight.⁷

Using the Nomogram

Figure 2 can be used during an interview or after direct measurement. For example, patient A is 40 years old. He is 5 feet 9 inches tall and weighs 200 pounds. Figure 2 shows that the BMI for Mr. A is $30 \text{ kg}/(\text{m})^2$. There is a moderate elevation of blood pressure to 145/90 mmHg, and an appropriate evaluation is made. With a BMI of $30 \text{ kg}/(\text{m})^2$ and an elevation in blood pressure, Mr. A should be encouraged to lose weight, but how?

Risks and Benefits of Various Weight Reduction Regimens

There are a great number of therapies available to Mr. A. He will choose one or more in accordance with his own perception of need and from the advice he receives from persons he trusts. The family physician is a trusted counselor for Mr. A,

but is not his only source of dietary advice. Mr. A is likely to receive suggestions such as reducing his caloric intake with a diet that mixes a variety of foods and provides the recommended daily allowance (RDA) of all nutrients, ie, an "acceptable" diet; reducing his caloric intake without receiving a mixture of foods or the RDA of all nutrients, ie, an "unacceptable" diet; participating in a self-help group for weight reduction; undergoing behavior modification with individual therapy or as part of a group; taking an exercise program; taking drugs; or undergoing surgery. The advantages, morbidity, cost, and mortality of each of these regimens are listed in Table 1.

Mr. A may perceive himself to be grossly obese, but as shown in Figure 1, his relative mortality is only modestly increased. He should be advised and assisted in a program of weight reduction that does not have increased risk of mortality in itself. Mr. A would be given diet counseling on a lowered-calorie diet acceptable to him. There would be discussion with Mr. A of behavior

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Motrin® Tablets (ibuprofen)

Contraindications: Anaphylactoid reactions have occurred in individuals hypersensitive to Motrin Tablets or with the syndrome of nasal polyps, angioedema and bronchospastic reactivity to aspirin, iodides, or other nonsteroidal anti-inflammatory agents.

Warnings: Peptic ulceration and GI bleeding, sometimes severe, have been reported. Ulceration, perforation and bleeding may end fatally. An association has not been established. Use Motrin Tablets under close supervision in patients with a history of upper gastrointestinal tract disease, after consulting ADVERSE REACTIONS. In patients with active peptic ulcer and active rheumatoid arthritis, try nonulcerogenic drugs, such as gold. If Motrin Tablets are used, observe the patient closely for signs of ulcer perforation or GI bleeding.

Chronic studies in rats and monkeys have shown mild renal toxicity with papillary edema and necrosis. Renal papillary necrosis has rarely been shown in humans treated with Motrin Tablets.

Precautions: Blurred and/or diminished vision, scotomata, and/or changes in color vision have been reported. If these develop, discontinue Motrin Tablets and the patient should have an ophthalmologic examination, including central visual fields and color vision testing.

Fluid retention and edema have been associated with Motrin Tablets; use with caution in patients with a history of cardiac decompensation or hypertension. In patients with renal impairment, reduced dosage may be necessary. Prospective studies of Motrin Tablets safety in patients with chronic renal failure have not been done.

Motrin Tablets can inhibit platelet aggregation and prolong bleeding time. Use with caution in persons with intrinsic coagulation defects and on anticoagulant therapy.

Patients should report signs or symptoms of gastrointestinal ulceration or bleeding, skin rash, weight gain, or edema.

Patients on prolonged corticosteroid therapy should have therapy tapered slowly when Motrin Tablets are added.

The antipyretic, anti-inflammatory activity of Motrin Tablets may mask inflammation and fever.

As with other nonsteroidal anti-inflammatory drugs, borderline elevations of liver tests may occur in up to 15% of patients. These abnormalities may progress, may remain essentially unchanged, or may be transient with continued therapy. Meaningful elevations of SGPT or SGOT (AST) occurred in controlled clinical trials in less than 1% of patients. Severe hepatic reactions, including jaundice and cases of fatal hepatitis, have been reported with ibuprofen as with other nonsteroidal anti-inflammatory drugs. If liver disease develops or if systemic manifestations occur (e.g. eosinophilia, rash, etc.), Motrin should be discontinued.

Drug interactions. Aspirin: used concomitantly may decrease Motrin blood levels.

Coumarin: bleeding has been reported in patients taking Motrin and coumarin.

Pregnancy and nursing mothers: Motrin should not be taken during pregnancy or by nursing mothers.

Adverse Reactions: The most frequent type of adverse reaction occurring with Motrin is gastrointestinal of which one or more occurred in 4% to 16% of the patients.

Incidence Greater than 1% (but less than 3%)—Probable Causal Relationship

Gastrointestinal: Nausea* epigastric pain* heartburn* diarrhea, abdominal distress, nausea and vomiting, indigestion, constipation, abdominal cramps or pain, fullness of GI tract (bloating and flatulence); **Central Nervous System:** Dizziness* headache, nervousness; **Dermatologic:** Rash* (including maculopapular type), pruritus; **Special Senses:** Tinnitus; **Metabolic/Endocrine:** Decreased appetite; **Cardiovascular:** Edema, fluid retention (generally responds promptly to drug discontinuation; see PRECAUTIONS).

Incidence less than 1%—Probable Causal Relationship**

Gastrointestinal: Gastric or duodenal ulcer with bleeding and/or perforation, gastrointestinal hemorrhage, melena, gastritis, hepatitis, jaundice, abnormal liver function tests; **Central Nervous System:** Depression, insomnia, confusion, emotional lability, somnolence, aseptic meningitis with fever and coma; **Dermatologic:** Vesiculobullous eruptions, urticaria, erythema multiforme, Stevens-Johnson syndrome, alopecia; **Special Senses:** Hearing loss, amblyopia (blurred and/or diminished vision, scotomata, and/or changes in color vision) (see PRECAUTIONS); **Hematologic:** Neutropenia, agranulocytosis, aplastic anemia, hemolytic anemia (sometimes Coombs positive), thrombocytopenia with or without purpura, eosinophilia, decreases in hemoglobin and hematocrit; **Cardiovascular:** Congestive heart failure in patients with marginal cardiac function, elevated blood pressure, palpitations; **Allergic:** Syndrome of abdominal pain, fever, chills, nausea and vomiting; anaphylaxis; bronchospasm (see CONTRAINDICATIONS); **Renal:** Acute renal failure in patients with pre-existing significantly impaired renal function, decreased creatinine clearance, polyuria, azotemia, cystitis, hematuria; **Miscellaneous:** Dry eyes and mouth, gingival ulcer, rhinitis.

Incidence less than 1%—Causal Relationship Unknown**

Gastrointestinal: Pancreatitis; **Central Nervous System:** Paresthesias, hallucinations, dream abnormalities, pseudotumor cerebri; **Dermatologic:** Toxic epidermal necrolysis, photoallergic skin reactions; **Special Senses:** Conjunctivitis, diplopia, optic neuritis; **Hematologic:** Bleeding episodes (e.g., epistaxis, menorrhagia); **Metabolic/Endocrine:** Gynecomastia, hypoglycemic reaction; **Cardiovascular:** Arrhythmias (sinus tachycardia, sinus bradycardia); **Allergic:** Serum sickness, lupus erythematosus syndrome, Henoch-Schönlein vasculitis; **Renal:** Renal papillary necrosis.

*Reactions occurring in 3% to 9% of patients treated with Motrin. (Those reactions occurring in less than 3% of the patients are unmarked.)

**Reactions are classified under "Probable Causal Relationship (PCR)" if there has been one positive rechallenge or if three or more cases occur which might be causally related. Reactions are classified under "Causal Relationship Unknown" if seven or more events have been reported but the criteria for PCR have not been met.

Overdosage: In cases of acute overdosage, the stomach should be emptied. The drug is acidic and excreted in the urine so alkaline diuresis may be beneficial.

Dosage and Administration: Rheumatoid arthritis and osteoarthritis. Suggested dosage is 300, 400, or 600 mg t.i.d. or q.i.d. Do not exceed 2400 mg per day. Mild to moderate pain: 400 mg every 4 to 6 hours as necessary.

Caution: Federal law prohibits dispensing without prescription.

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DIET FOR OBESITY

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patterns that are associated with his overeating. He would be encouraged to utilize a self-help group and (after careful medical evaluation) to participate in a graduated daily exercise program. If Mr. A were to express an interest in unacceptable diets, drug therapy, or surgery, the increased risks associated with these regimens would be discussed. The importance of fat both as a dietary constituent and as a necessary part of the body would be emphasized.

Patients can be encouraged to understand that some fat on the body is both healthful and attractive and that moderate obesity is associated with no increase in mortality unless there is a specific diagnosis such as hypertension, diabetes mellitus, or hyperlipidemia.⁹ For women, it can be pointed out that excessive leanness may lead to amenorrhea and infertility.³⁴ For those patients, often young women, who seek drastic weight loss when their BMI is below 25 kg/(m)², suspicion should be aroused as to an inappropriate self-image. The possibility of anorexia nervosa should be considered.³⁵ In each case dietary recommendations should be tailored to the patient's individual needs.

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Teaching Basic Surgical Skills to Family Medicine Residents

Robert E. Stelle, MD, and L. Beaty Pemberton, MD
Kansas City, Missouri

Family medicine residents often come from such widely diverse medical school backgrounds that the members of any first-year residency class will likely exhibit a significant range of capabilities and experience in basic surgical skills. With the rare exception of the resident who has had an extensive surgical experience outside the medical school environment (eg, the ex-corpsman who worked as a surgical technician or surgical assistant), most first-year residents do not have adequate skills to handle the minor surgical problems that will immediately begin to surface in the emergency room and as the resident builds a residency practice in the model family medicine clinic. After this problem was identified in both first- and second-year residents, teaching sessions were de-

signed with the overall goal of helping to elevate each resident's basic surgical skills to a level at which he or she can then learn from each subsequent minor surgical encounter. The attempt to raise the individual skill levels became an essential part of the residents' orientation program and took place during the first month of residency.

Teaching Sessions

A format consisting of three 3-hour sessions, two in the classroom, and a third in the dog laboratory, was selected. In addition to the authors, a fourth-year general surgery resident participated in all three teaching sessions.

Classroom Session I

The first hour of this session was used for a discussion of antisepsis and sterile technique and discussion and demonstration of basic instruments, needles, and suture materials.¹ The second hour was devoted to a demonstration of two-

From the Departments of Family Medicine and Surgery, School of Medicine, University of Missouri-Kansas City, and the Departments of Family Medicine and Surgery, Truman Medical Center, Kansas City, Missouri. Requests for reprints should be addressed to Dr. L. Beaty Pemberton, Department of Surgery, Truman Medical Center, 2301 Holmes Street, Kansas City, MO 64108.