

# HOSPITAL PHYSICIAN®

## GASTROENTEROLOGY BOARD REVIEW MANUAL

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The *Hospital Physician Gastroenterology Board Review Manual* is a study guide for fellows and practicing physicians preparing for board examinations in gastroenterology. Each manual reviews a topic essential to the current practice of gastroenterology.

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## Obesity and Its Impact on Gastrointestinal Disease

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# Obesity and Its Impact on Gastrointestinal Disease

Amy C. Tiu, MD, and Richard N. Redinger, MD

## INTRODUCTION

Obesity, a chronic disease that has become a major health problem in several countries, is associated with a range of gastrointestinal disorders. It is important for gastroenterologists to recognize the increased prevalence of obesity and its causal relationship with multiple medical conditions and to be equipped to manage obesity-related gastrointestinal problems. Obesity is a fundamental component of the metabolic syndrome, a constellation of risk factors for cardiovascular disease and type 2 diabetes mellitus (**Table 1**). This review describes the classification of obesity as well as pathogenetic and biochemical aspects of the disease. Several gastrointestinal disorders linked to obesity are reviewed. The management of obesity is briefly discussed but is not a focus of this review.

## CASE PRESENTATION

A 28-year-old woman presents for her first visit to a gastroenterologist with burning epigastric pain for the past several months. Her height is 5 ft and her weight is 204 lb. She states that the pain, which is worse at night, occasionally radiates to her right upper quadrant. The pain is sometimes worsened by food, but she has mild pain even when she has not eaten. In addition, stress increases the epigastric pain. The pain is sometimes relieved by a bowel movement. She has one formed bowel movement every other day.

The case patient also describes an acid taste in her throat that she notices after episodes of repeated belching. Despite having increased gas and discomfort, the patient has not decreased her food intake substantially and has not lost weight. She does not participate in regular exercise or follow any particular diet plan. The patient reports that she has had these symptoms for several years with minimal relief from over-the-counter medications.

## EPIDEMIOLOGY OF OBESITY

The case patient is representative of a growing population of obese patients in the United States. Results from the 1999–2002 National Health and Nutrition

Examination Survey (NHANES) indicate that an estimated 65% of adults in the United States are either overweight or obese (body mass index [BMI]  $\geq 25.0$ ).<sup>1</sup> These data reflect a prevalence of overweight that is 16% higher than the age-adjusted estimates obtained from NHANES III (1988–1994). NHANES 1999–2002 data for persons aged 20 years and older also suggest an increase in the proportion of obesity (BMI  $\geq 30.0$ ), with an age-adjusted prevalence of obesity of 30% in the 1999–2002 report versus 23% in NHANES III. Among adults aged 20 to 74 years, the estimated prevalence of obesity has doubled from approximately 15% in NHANES II (1976–1980) to an estimated 31% in NHANES 1999–2002.<sup>1</sup>

Obesity is responsible for approximately 300,000 preventable deaths annually in the United States, making it second only to cigarette smoking as the leading cause of preventable death.<sup>2</sup> Costs attributable to obesity totaled \$99.2 billion in the United States in 1995, accounting for 5.7% of national health care expenditures.<sup>3</sup> In a study of Medicare participants, after adjustment for baseline age, race, education, and smoking, higher BMIs in young adulthood and middle age led to increases in Medicare expenditures at age 65 years and older.<sup>4</sup>

## BODY MASS INDEX

Obesity can be roughly defined as an abnormal accumulation of fat in proportion to body size that increases risk of medical illness and premature death. Although there are many ways to measure the body fat mass in individuals, the most widely established and recognized schema for classifying weight status is the BMI. The World Health Organization, the National Institutes of Health, Healthy People 2010, and the 2000 Dietary Guidelines for Americans all promote guidelines using BMI. BMI is calculated by dividing weight (in kilograms) by the square of the height (in meters). (A BMI calculator is available at [www.nhlbisupport.com/bmi](http://www.nhlbisupport.com/bmi).) The BMI and associated risk of disease has been established using epidemiologic studies.<sup>5–7</sup> Health complications associated with obesity increase linearly with increasing BMI until age 75 years. Calculation of BMI should be a part of the initial evaluation