Foreword

Recent epidemiologic studies have noted a plateauing of obesity rates in the USA following decades of steady escalation. Currently, 34.9% of the US adult population is considered obese, as defined by a body mass index of 30 or greater, which has been stable in the years 2011–2012 as compared to 2003–2004 [1]. However, these statistics belie that severe cases of obesity have escalated at a more dramatic rate than general obesity. Between the years 1986 and 2000, the prevalence of BMI 40 or greater quadrupled to one in 50 Americans and the prevalence of BMI of 50 or greater increased fivefold [2]. Currently, 6.4% of the US adults are classified as extremely obese (BMI 40 or greater), [1] having important implications for prognosis and treatment.

In 2013, the American Medical Association recognized obesity as a disease. This designation underscores the scientific literature that has linked obesity to appetite dysregulation, abnormal energy balance, endocrine dysfunction, and dysregulated signaling from adipocytes (fat cells) resulting in cardiometabolic morbidity [3]. In short, excess adipocity results in an aberrant physiology or *pathophysiology* that necessitates long-term treatment and prevention.

There have been significant advances in both the medical and surgical treatment of obesity. Recent years have seen the development of new pharmacologic agents approved for long-term treatment. Combination phentermine/topiramate, trade name Qsymia, is a combination of two well-established drugs. Phentermine, a commonly used appetite suppressant was coupled with topiramate, initially FDA approved as an anti-epileptic, but was found to result in weight loss and likely secondary gabaminergic appetite suppression in the brain. Combination phentermine/topiramate has been shown to result in up to 10.7% total weight loss [3] and improvement of cardiometabolic measures including blood pressure, glycemic abnormalities, and lipids including HDL and triglycerides [4]. A second agent, lorcaserin, selectively agonizes hypothalamic serotonin receptors specifically involved in appetite control. In contrast to historic nonselective serotonin agonists which resulted in valvulopathy and were subsequently removed from markets, lorcaserin does not result in statistically significant valvulopathy [6] and has proven a modest weight loss of 5% with improvement in cardiometabolic abnormalities [7]. Most recently, the FDA approved combination naltrexone/bupropion, trade name

Contrave, for the treatment of obesity with weight loss intermediate to that of lorcaserin and phentermine/topiramate. Bupropion reduces food intake by acting on hypothalamic anorectic pathways while naltrexone is believed to enhance satiety by blocking auto-inhibition of these pathways. [8] These drugs have all demonstrated successful weight losses of 5–10 %, the threshold at which improvements in obesity related comorbidities are achieved. Finally, liraglutide, a GLP-1 agonist currently approved for the treatment of type II diabetes, has demonstrated promising weight loss in obese, non-diabetic subjects. A study in Europe reported weight losses as high as 7.2 kg compared to 2.8 kg in the placebo arm [9]. This medication has been favorably reviewed by the FDA and is expected to become available later in 2015 as a pharmacologic treatment option for non-diabetic obese. Future strategies will likely capitalize on combination therapy and biologics as promising pharmacologic treatment options.

Surgical treatment of obesity has also evolved dramatically in recent years. The laparoscopic approach has proven not only feasible, but the mainstay owing to reduced complication rates and quicker recovery time [10]. Sleeve gastrectomy, previously considered a staged procedure, has demonstrated comparable efficacy to other bariatric procedures in regards to weight loss and comorbidity reduction, [11] and therefore has seen a dramatic increase in use while use of adjustable gastric banding has declined in the USA [12]. Clinical data has continued to emerge regarding morbidity reduction in bariatric surgery patients, particularly in the area of diabetes [13–15], as has a greater understanding of potential mechanisms of weight loss and metabolic improvement including incretin effects of surgery [16]. Overall, the number of bariatric surgeries has increased in the USA over the last several decades leaving the long-term management of the bariatric surgery patient to the primary care practitioner.

Lifestyle modification remains the cornerstone of obesity therapy irrespective of adjunctive pharmacotherapy or surgery. Recent studies have supported the efficacy of lifestyle modification in reducing weight and improving comorbidities. The Look Ahead (Action for Health in Diabetes) trial, a multicentered trial completed in 2013, attempted to demonstrate the benefit of intensive lifestyle modification in the reduction of cardiovascular endpoints. While the primary endpoint was not accomplished, this large cohort did confirm the favorable effects of lifestyle modification in weight reduction and reaffirmed behavioral predictors of weight loss such as attendance of group support and education [17].

It has been well established that obesity results in significant medical and psychosocial comorbidity as well as an increased hazard ratio for all-cause mortality [18]. Obesity also results in significant health-care costs [19] and collateral costs owing to absenteeism and reduced productivity [20]. As a result, numerous professional societies and medical advisory boards have mandated that obesity be identified, diagnosed, and treated. Despite this directive, obesity remains both underdiagnosed and undertreated. In one study of 845 million outpatient visits in the USA, only 29 % of visits by patients who were obese according to BMI had a documented diagnosis of obesity [21]. Furthermore, recent studies have noted a decline in weight-related counseling by primary care practitioners. In one study, only 6.2 % of patients in a large sample of 32,519 adult primary care visits received counseling

on diet, exercise, or weight-related issues. [22] Finally, in a survey of 5000 primary care physicians, less than half felt competent in prescribing weight loss programs and less than one fourth would refer a patient who met appropriate criteria for obesity surgery to a surgeon for evaluation [23]. Cited reasons in the literature by providers for lack of counseling and or treatment include lack of training in nutrition and obesity, perceived inability to change patient behaviors, lack of confidence in effectiveness of treatments, and the belief that patients are not motivated to undertake necessary treatments [24].

In response to these barriers to the treatment of obesity, we have collaborated to create a text aimed not only at educating practitioners about obesity, but also providing practical strategies in the comprehensive approach to treat this disease. There are inherent redundancies so that the busy clinician can use this text as a reference. However, the text is comprehensive enough to allow a thorough overview of obesity therapy for the clinician who wishes to read this text from start to finish. Despite recent reports heralding a leveling of obesity rates, it remains that one in three Americans are obese. These alarming statistics warrant aggressive diagnosis and treatment of obesity.

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http://www.springer.com/978-1-4939-2145-4

The Clinician's Guide to the Treatment of Obesity

Youdim, A. (Ed.)

2015, XIX, 205 p. 24 illus., 18 illus. in color., Softcover
ISBN: 978-1-4939-2145-4